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ABSTRACT

This resource guide is designed to assist career-vocational educators in providing disadvantaged students with the skills wanted by employers and to increase educators' effectiveness in teaching academically and economically disadvantaged students with limited English proficiency (LEP). The guide is divided into five sections. "The Disadvantaged Student" provides an overview of the educational problems of disadvantaged (including LEP) students with general suggestions, based on current research, on how to increase their achievement. "Transition Experiences: School to Work" contains strategies to promote successful school-to-work transition through career awareness, career exploration, employability skills training, and work experience education. "Integration of Academic Core Curriculum and Vocational Content" contains specific strategies to improve students' performance in reading, writing, mathematics, problem solving/critical thinking, and oral and nonverbal communication skills with examples in all vocational subject areas. "Effective Teaching Strategies" describes the teaching strategies and support services that should be provided to ensure the success of disadvantaged students in career-vocational education. "Effective Program Practices" describes programs that show promise for providing vocational education to all students. Asterisks in the narrative refer the reader to references at the end of the section for a specific resource. An annotated listing of 15 resources concludes the guide. (YLB)

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Career-Vocational Education Division

California Department of Education

Teaching Disadvantaged Students: Successful Strategies in Career-Vocational Education

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Teaching Disadvantaged Students: Successful Strategies in Career-Vocational Education

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October, 1990

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Introduction

> *"Ultimately, good teaching and high regard are the greatest potential bonuses for the at-risk student...."*
>
> — Barbara Z. Presseisen

The Carl D. Perkins Vocational Education and Applied Technology Act of 1990 (PL 101-392) emphasizes the importance of preparing disadvantaged students with the skills that will be the foundation for a lifetime of work in a rapidly changing economy. The term "disadvantaged" means individuals (other than individuals with handicaps) who have economic or academic disadvantages and who require special services and assistance in order to enable them to succeed in vocational education programs. The term includes individuals who are members of economically disadvantaged families, migrants, individuals with limited-English proficiency, and individuals who are identified as potential dropouts from secondary school (PL 101-392, Section 521(13)).

Since the 1960s, federal vocational education legislation has focused on addressing the special needs of disadvantaged students, but the achievement gap between advantaged and disadvantaged students has not yet been closed. In fact, since society's requirements for education have risen rapidly as an information-based economy has transformed the American workplace, disadvantaged students will need to be skilled in higher-order thinking processes to succeed in the work force of the 21st century. Further, numerous studies have identified that, in addition to specific occupational skills, a large part of what employers are seeking in new hires is basic academic skills (Bishop, 1985; Crain, 1984; California Economic Development Corporation, 1988).

To ensure that these essential skills are provided in vocational education programs, the **reauthorization act specifies that academic and vocational education must be integrated**. The newly-developed California Model Curriculum Standards and Program Frameworks in career-vocational education also reflect this emphasis on skills integration. These new frameworks were based on the philosophy originally expressed in the *Model Curriculum Standards, Grades Nine Through Twelve*, published by the California Department of Education in 1985. It stated that vocational education, in addition to its traditional role as a strong elective program designed to prepare students for employment, should also **play a more central role in teaching and reinforcing core academic content and skills**. Each vocational subject area, therefore, included the reinforcement of core academics as a major underpinning of its Curriculum Frameworks.

Disadvantaged students are enrolled in and earn more credits in vocational education than their non-disadvantaged counterparts (Hayward and Wirt, 1990). The challenge to career-vocational educators is to help these disadvantaged students overcome their disadvantages. The good news is that research in the field of cognitive psychology over the last ten years has made significant progress in identifying differences in how high and low-achieving students learn. These differences are primarily in the areas of how students think and how they interpret their success or failure (Smey-Richman, 1988). As a result of this research, strategies have been developed that can improve the success of disadvantaged students in the classroom.

The purpose of this resource guide is to disseminate these strategies and address the critical needs of the increasing numbers of disadvantaged students. These strategies will assist career-vocational educators to:

- provide students with the skills wanted by employers, and

- increase their effectiveness in teaching academically and economically disadvantaged students and students with limited-English proficiency.

Although this publication is directed toward disadvantaged students, **the strategies discussed will be effective with other special populations, such as students with handicapping conditions.** It is anticipated that through the use of strategies such as those suggested in this guide, you will be better able to prepare special needs students to find employment in a competitive marketplace.

"I don't get it! They make us learn reading, writing, and arithmetic to prepare us for a world of videotapes, computer terminals, and calculators!"

The guide is divided into five sections:

Model Curriculum Standards and Program Frameworks — introduces the integration of academic and vocational education in all vocational subject areas.

The Disadvantaged Student — provides an overview of the educational problems of disadvantaged (including LEP) students with general suggestions, based on current research, on how to increase their achievement.

Transition Experiences: School to Work — contains strategies to promote successful school to work transition through career awareness, career exploration, employability skills training, and work experience education.

Integration of Academic Core Curriculum and Vocational Content — contains specific strategies to improve students' performance in reading, writing, mathematics, problem solving/critical thinking, and oral and nonverbal communication skills with examples in all vocational subject areas.

Effective Teaching Strategies — describes the teaching strategies and support services that should be provided to ensure the success of disadvantaged students in career-vocational education.

Effective Program Practices — describes programs that show promise for providing quality vocational education to all students.

Use this publication as a reference to resources that will help you learn more about each technique. When you see an asterisk (*) in the narrative, refer to the references at the end of the section for a specific resource.

In-depth staff development in the described strategies can be requested from the **Vocational Education Resource System (VERS)**. VERS is a comprehensive technical assistance and information referral system designed to assist career-vocational educators, counselors, and administrators to improve and expand programs and services for students with special needs (disadvantaged, limited-English proficient, or students with handicapping conditions). VERS supplies technical assistance to educators in areas such as program administration, instructional strategies, finances, accountability, and grantwriting. In addition, VERS also provides regional workshops, inservice training, and telephone consultation.

VERS
California Institute on Human Services
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The print and audiovisual resources listed at the end of each section are available through the **Vocational and Occupational Information Center for Educators (VOICE)**. VOICE provides instructional materials, including audiovisuals, reference materials, textbooks, learning activity packages, transparencies, curriculum guides, and project reports to teachers, administrators, students, and decision makers working with students with special needs at all educational levels.

VOICE
California Institute on Human Services
Sonoma State University
1801 E. Cotati Ave.
Rohnert Park, CA 94928
(707) 664-2416

Because some of the resources have been placed in VOICE only recently, not all have VOICE identification numbers. A VOICE order form can be found at the end of this guide.

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Bishop, J. (1985). Preparing youth for employment. Columbus, OH: National Center for Research on Vocational Education.

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Model Curriculum Standards and Program Frameworks

The Integration of Academic and Vocational Education

A major theme of reports on educational reform during the 1980s was the failure of American schools to adequately prepare students in the areas of reading, writing, speaking, mathematics, and critical thinking. Report after report (Boyer, 1983; Sizer, 1984; Goodlad, 1983) documented an unacceptably high dropout rate, coupled with the inability of many high school graduates to perform well enough to find meaningful work during or after high school. Employers, too, demanded students with high skill levels in reading, comprehending, and thinking (California Economic Development Corporation, 1988). A business and industry technical committee, convened by the California Department of Education in 1986, delineated academic skills as an essential component of the employability skills needed to successfully secure employment and advance in a career. The academic skills identified by the committee are outlined below.

BASIC SKILLS NEEDED FOR EMPLOYMENT

I. English Language

- Reading Comprehension
- Writing
- Speaking
- Communication
- Listening

II. Critical Thinking

- Transfer of Information
- Development of Work Plan
- Problem Solving
- Product or Performance Evaluation

III. Mathematics

- Whole Numbers
- Fractions
- Decimals
- Percent
- Mixed Operations
- Measurement and Calculation
- Making Change
- Other Skills

IV. Computer Use

In response to the need for higher academic skill levels the Department of Education initiated a series of actions focused on curriculum reform. The most comprehensive action, directed by the State Superintendent of Public Instruction, was the development of Model Curriculum Standards and Program Frameworks for each academic and vocational subject area. Using the input of classroom teachers, administrators, parents, postsecondary educators, and representatives of business and industry, each subject area developed a set of model standards which represented their vision of an exemplary curriculum. Following publication of the standards, each district was required to compare its curricula with the model standards and to determine if it was necessary to upgrade their curricula.

The career-vocational education Model Curriculum Standards and Program Frameworks emphasized the teaching and reinforcing of basic academic skills, based on the 1986 recommendation of the business and industry technical committee. Vocational content was cross-referenced with the model curriculum standards in English/Language skills, Mathematics, History-Social Science, and Science. Because each vocational subject area used a unique format, there is no comprehensive matrix cross-referencing all vocational and academic areas. However, the following examples from Industrial and Technology Education and Home Economics are provided (Figures 1 and 2). Figure 1 demonstrates language arts, mathematics, and science infused into the Motorcycle Repair Unit in Industrial and Technology Education. Figure 2 shows mathematics skills

Metrics and Precision Measurement

Ninety-five percent of motorcycles sold in America today are manufactured according to the metric system of measurement. All motorcycles require precision measurement because of their exacting mechanical tolerances. It is necessary for the technician to fully understand the metric system and be able to use precision metric measuring instruments.

Standard: The student will display an understanding of the metric system and demonstrate its use in conjunction with performing specific measurements with the precision measuring instruments used in the motorcycle industry.

Motorcycle Engine

The engine is the heart of any motorcycle and is the main focus of maintenance and repair. A theoretical and pragmatic understanding of motorcycle engine maintenance is essential in meeting industry standards.

Standard: The student will comprehend engine theory and operation and will be able to apply this knowledge to the actual manipulation of parts and components in the performance of repairs to factory specifications.

Figure 1. Infusion of mathematics and science into the Industrial Technology Education curriculum.

California's emphasis on academics was reinforced on the federal level with the passage of legislation in 1990 reauthorizing the Carl D. Perkins Act. The act states that, "It is the purpose of this Act to make the United States more competitive in the world economy by developing more fully the **academic** and **occupational** skills of all segments of the population." Basic grant funds shall be used to provide:

1) integrated academic and vocational training where
   - a sequential course of study is provided;
   - students achieve both academic and occupational competencies; and
   - special populations are provided with equitable participation (PL 101-392, Section 235 (c)(1)(B)).
2) counseling to encourage students to pursue coherent sequences of courses (PL 101-392, Section 240 (12)(A)).

The act requires each State and LEA to evaluate the effectiveness of vocational education programs with respect to progress in the achievement of basic skills, as well as the program's ability to meet the needs of special populations. Since disadvantaged (special needs) students often have a history of poor performance in career-vocational education programs due to deficiencies in reading, writing, critical thinking, and/or mathematical ability, **the success of vocational education programs will be increasingly judged by the programs' ability to assist in the development of academic skills.**

This resource guide was developed to assist career-vocational education teachers who work with special populations to integrate academic and vocational education. The successful integration of these disciplines will meet the mandates of the 1990 federal vocational education reauthorization legislation as well as the state requirements under SB 813. More importantly, for many disadvantaged students, integrating academic and vocational education is the best way to relate abstract courses and concepts to real-life

HOME ECONOMICS EDUCATION MATRIX
CORRELATION OF CALIFORNIA STATE DEPARTMENT OF EDUCATION MODEL CURRICULUM STANDARDS FOR ECONOMICS AND HOME ECONOMICS MODEL CURRICULUM STANDARDS AND FRAMEWORKS FOR THE CONTENT AREA OF

CONSUMER EDUCATION

ECONOMICS	CONSUMER EDUCATION	ACADEMIC CORE REINFORCEMENT	1. LANGUAGE: The student will be able to use the basic academic skills of reading, writing, speaking and listening as required for the occupation of homemaker in the area of consumer education and for transfer to other jobs and careers.	2. MATH: The student will be able to use the base academic mathematical skills as required for the occupation of homemaker in the area of consumer education and for transfer to other jobs and careers.	3. SCIENCE: The student will be able to apply basic concepts of science as necessary for the occupation of homemaker in the area of consumer education and for transfer to other jobs and careers.	4. CRITICAL THINKING: The student will be able to apply critical thinking skills to the occupation of homemaker in the area of consumer education and for transfer to other jobs and careers.	CONTENT AREA	5. The student will develop goal selection and apply this knowledge to consumer decisions.	6. The student will evaluate occupational goals in terms of projected income, lifestyle, personal goals and needs.	7. The student will develop a financial plan according to individual and family goals, values, needs and income.	8. The student will plan purchases for individuals and families by using all available resources.	9. The student will demonstrate a knowledge of consumer rights and responsibilities in the marketplace.	10. The student will be able to make informed decisions in the selection and use of credit.
1. A course should demonstrate that the study of economics requires the understanding of certain fundamental concepts and terms. Among those are the terms with definitions that appear in the glossary at the end of this section.			a - f			a - d		L1a-e L2a-d L3a-c L4d	L1a,c,d L2a,b,c L3b,c L4a,b	L1a-e L2a-c L3a-d L4a-b	L1f L2a,d L3b L4b	L1b,c,f L2b,c,e L3a-d	L1a-d,f L2a-f L3a-d L4a-c
2. A course should include a study of the tools of analysis, such as charts, graphs, statistics and marginal analysis.			d	c,e		a - d		L4b-e	L1b-f L2a-d L3b,c L4a,b	L1b-e L2a,b L3b-d L4a	L1a,e L3a L4a,c,d,e		L1d,f L2a,c,d L3a L4a-c
3. A course should show that economics measure economic performance by using certain economic indicators.			a - f	c		a - d			L1c,e L2c L3b,d L4a,b	L1b,e L2a,b L3a-d L4b	L1d L2c,d L3b L4a,e	L1f L2b L3b-d L4d,e	L1b L2a,b,e L4b
4. A course should make it clear that the basic economic problem facing society is the condition of scarcity, or limitation on productive resources relative to human wants. As a result of this scarcity, *choices* must be made, taking account of the opportunity costs of each choice.			a - f	c		a - d		L2e L3b,c L4c,d,e	L1a,b,e,f L2c L3d L4b	L1a,c,d L2a,b L3a,b L4a	L1d L2f L3a L4c		
5. A course should demonstrate that all the societies have economic systems that enable them to make choices on what is to produce, how to produce it and for whom to produce it. The economic system of the United States relies primarily on the market to make these choices.			a,b,e,f			a - d		L1e L2d L3b,c L4a-e			L2f L3a,c L4a,e		
6. A course should show that the United States has an economy characterized by certain important elements, including competition and market structure, freedom of choice, private ownership and profit and loss.						a - d		L1a-e L2a-d L3a-c L4a-e	L4b	L1c L2b	L1a,c,d L2a-g L3a-c L4a-d	L1d,f L2c L3a-d L4a-e	
7. A course should help students realize that all individuals should utilize economic concepts and consumer skills in their decision making in place of emotional judgment.			a - f	a - e		a - d		L1d,e L2b,c,d L3a-c L4a-e	L1b,e,f L2a,b L3a L4b	L1a-e L2a-c L3b,d L4a	L1c,d,g L2a-g L3a L4c,d	L1a-f L2a-g L3a-d L4a-e	L1b-e L2c,e L3b,d L4a-c
8. A course should demonstrate that labor, agriculture and business organizational have played major roles in the historic and contemporary development of the United States economy.			a,b,c,e,f			a - d							

The horizontal axis identifies the home economics model curriculum standards, and the vertical axis lists the model curriculum standards for the related academic area. The matrix identifies those home economics and academic standards that have a direct correlation. Where there is a correlation, the numbers assigned to the home economics performance indicators are shown in the grid.

Figure 2 Infusion of language arts, mathematics and science into the Home Economics curriculum. (Source: DeBenedetti, et al. 1980)

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experiences. Integration of academic skills with occupational skills will provide a needed balance in the curriculum, and will enable disadvantaged students to fulfill the mission of career-vocational education in California, "... to enhance the personal and economic well-being of individuals and to develop human resources which contribute to the economic development of the state."

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THE DISADVANTAGED STUDENT

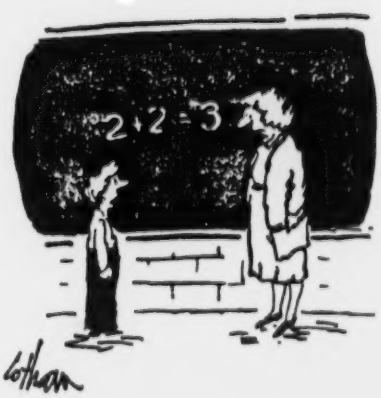
Disadvantaged Students

Disadvantaged students lack basic skills, exhibit poor attendance, display disruptive, passive or apathetic behavior, and/or have unsatisfactory interpersonal relationships. They are often the children of the culture of poverty, the ones who need extra attention because adverse circumstances have affected their social and educational behavior. Conservative estimates put the proportion of disadvantaged students at one-third of all students currently enrolled in public education (Pallas, Natriello, and McDill, 1989). Disadvantaged students are students who will not be successful unless special assistance is provided.

The Carl D. Perkins Vocational Education and Applied Technology Act of 1990 targets federal dollars to the local level to serve students in greatest need based on the Chapter 1 formula in the Elementary and Secondary Education Act. Once the money is allocated, there are four public school populations which must be served. They are the economically disadvantaged, the disabled, the limited-English proficient, and those preparing for occupations that are non-traditional to a specific gender. The incarcerated (students in correctional facilities) are also included in the allocation process.

Disadvantaged students often exhibit the following behavior in classroom situations. They may:

- **Be less verbal in a formal, structured setting.** (Lack of self-confidence and a strong fear of being wrong cause many disadvantaged students to refrain from speaking out in a public situation.)
- **Do better when problems are concrete and people centered.** (This approach utilizes the disadvantaged student's reservoir of information and experience regarding human behavior.)
- **Act tough, or passive and apathetic, to cover up the fact that they are afraid to fail.** (Disadvantaged students try to avoid the social disapproval and sense of worthlessness they have suffered in past failure experiences.)
- **Get discouraged easily.** (As a result of years of being in competitive classes in school, disadvantaged learners believe that even with additional effort they generally do not achieve as well as some other students.)



"I've never been as painfully aware of my limitations as I am right now."

Disadvantaged students may also:

- reject acceptance by other students;
- create fantastic stories;
- be disruptive in class and often fight with peers;
- question and challenge teachers' motives;
- have difficulty making and keeping friends;
- display socially inappropriate behaviors; and
- appear to seek failure.

Two opposite patterns predominate — hostile or defiant attitudes or passive and withdrawn ones.

What Can I Do to Help Disadvantaged Students Succeed in Career-Vocational Education?

Probably the greatest single quality a teacher can bring to disadvantaged students is personal respect for them as human beings, concentrating first on the student rather than on the subject matter. Students' strengths and interests must be assessed and built on, in order to establish an atmosphere of trust and encouragement. Student learning needs must be diagnosed, and the appropriate services provided to assist the disadvantaged student to succeed.

Resources

California Department of Education, Home Economics Education. (1988). Promoting student achievement: Teaching behaviors that work. A guide for consumer and homemaking education and home economics related occupation teachers working with academically disadvantaged students. Designed to give a brief overview of academically disadvantaged students and strategies for working with them. VOICE #07819.

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Teaching Disadvantaged Students

Differences exist in how students perceive, interact, and respond to their learning environment. These differences depend on who we are, where we are, how we see ourselves, what we pay attention to, and what people ask and expect of us. The term 'learning style' or 'learner preference' is used to describe these learner differences.

Dunn, et al. (1989) defined learner differences in terms of:

- environmental factors (sound, light, temperature, design);
- emotional factors (motivation, persistence, responsibility, structure);
- sociological factors (working alone, in small groups, in large groups, with peers, or with adults);
- physical factors (sensory intake, time, mobility); and
- psychological factors (left brain-right brain, impulsive-reflective, or global-analytical).

Other experts identify learner differences using personality type (Myers, 1975) to explain how an individual perceives meaning, expresses values and commitment, and interacts with others. Still others use information processing differences (concrete random, concrete sequential, abstract random, and abstract sequential) to identify how an individual approaches the acquiring of new information (Gregoric, 1984).

The topic of learning styles is a very broad area. It is conceptually broad in that it is inclusive of cognitive and affective processes and aptitudes. It is broad in that many different models of learning styles have been proposed and instruments developed. It is broad in its application: learning styles are used as an aid to help the individual know him/herself; for designing curriculum and instructional processes; and to diagnose learner differences and match teaching methodology.

Learning Styles and Teaching Styles

An awareness of learning style can benefit both the student and the teacher (Davidson, 1990). Teachers can see the need for more versatile teaching techniques by recognizing the cognitive and affective diversity of learners. Students can begin to control learning situations and improve their learning performance. Awareness of diversity of learning styles may serve to increase acceptance of differences among people.

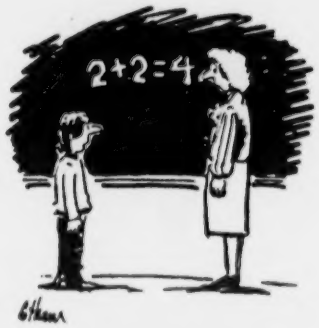
There are two aspects of learning style that teachers commonly address in the classroom: sociological factors and physical factors. Sociological factors include the human interaction involved with learning — contact with teachers and peers, learning individually or in groups. Physical factors include sensory intake (information gathered visually, auditorally, or through hands-on activities) and timing (pace of learning).

Over the past decade, many experts have advocated gearing lessons to individual learning styles with the expectation that by identifying each individual's preferred learning style and tailoring instruction to meet that style, achievement will be maximized. Recent research (Cohen, et al., 1989) does not support the hypothesis that learning will be increased if teaching style is matched to *each* individual's learning style. In fact, after reviewing over 1800 references in the ERIC database on learning styles, and analyzing the 30 studies that were research based, the authors suggested that publications on learning styles be disregarded due to lack of empirical evidence.

Because of the wide variation among learners' styles within the classroom and the cost of instructor time in matching teaching style to learning style, it may be inappropriate to tailor instruction specifically to the individual learning styles of students. Accommodating learning styles, however, can produce impressive gains in achievement and can impact school climate and staff, as well as student morale (Brandt, 1990). For this reason, it is recommended that **teachers focus on using a variety of teaching styles to accommodate the different learning styles of students.**

Cognitive and Metacognitive Strategies to Use with Disadvantaged Students

Research indicates that differences exist in the cognitive and metacognitive strategies used by high and low achievers (Presseisen, 1988; Jones, 1988; Wehlage and Rutter, 1986). The combination of learning style, cognition, and metacognition may be critical to the process of filing and retrieving information in long-term memory (see Memory Training).



"Shouldn't numbers have dollar signs in front of them?"

Cognitive strategies or cognition is defined as the ability to learn, to think abstractly, and to adapt to new situations.

Studies indicate that disadvantaged students tend to be dynamic in their thinking, basing their responses to problems or questions on feelings or intuition rather than on an analysis of what the problem is about and the development of a plan to solve it. This pattern of behavior seems to occur because disadvantaged students utilize the nonverbal feedback of others in order to determine whether their own actions are appropriate (Baker and Garfield-Scott, 1981). An example of this is the student who performs a skill without understanding why, and when the teacher nonverbally signals approval of the performance, the student responds accordingly. However, the teacher may not be aware that the student's performance continues only as a result of this nonverbal signal rather that from an understanding of the skill itself (Feichtner and Burstyn, 1974; Feichtner, 1980).

Metacognitive strategies or metacognition is defined as the awareness of the strategies used in one's own thinking and learning.

Research has shown that high achievers use specific strategies that correlate to increased learning ability. High achievers consciously recall all they know about a topic and then relate new information to their prior knowledge. For example, when a high achiever is asked to learn the proper way to balance a tire, he or she immediately thinks of everything he or she knows about tires and balancing machines before attempting to learn anything new. High achievers also pay close attention to a teacher's explanation, and use the explanation as an advance organizer.

Effective Strategies to Use with Disadvantaged Students

Disadvantaged students need to be taught explicit cognitive strategies. For example, conduct a brainstorming session and ask the students to list everything they know about a topic before you introduce new material. After the lesson, review what was learned and point out how much easier the learning was because the students were able to relate the new information to what they already knew. Explain that this is a strategy that will increase their learning ability.

Relate Classroom Instruction to the Real World

Another way to help disadvantaged students increase their cognitive skills is to provide more structured information about why they are being asked to do specific classroom assignments (Brophy, 1986). Low-achieving disadvantaged students often do not understand the purpose of classroom lessons, and concern themselves primarily with finishing a task rather than mastering the material. Yet disadvantaged students typically have a strong sense of social realities, and will do better when they understand the relationship between what they are being asked to do and its connection to the real world. Use materials that are people and problem centered. Begin by describing situations that deal with specific human behavior, especially as the behavior relates to the world of work. Explicitly describe the relationship between the skill being taught and its utility in the work world. For example, "We are going to learn how to balance a tire using a bubble balancer. Knowing how to use a bubble balancer is important because bubble balancers are inexpensive and simple to operate, and therefore quite popular in auto shops. Bubble balancers can be used for about 90% of the balance complaints that come into the auto shop." After you have taught the skill, abstractions and generalizations can be developed.

Discuss Cognitive Strategies

Model the thinking process and problem-solving strategies by describing the steps you would use in solving a problem or have the students describe to each other how they solve specific problems. If you ask students to describe their thought processes, be aware that it can be a frightening experience. Maintain an atmosphere of openness in the classroom in which students feel free to make mistakes and know they will be respected for trying.

Break Complex Problems into Simple Steps

Describe the steps of problem solving. They are:

- Identify the problem. Sometimes saying it out loud will help to clarify what the problem is.
- Identify the information that will be needed to solve the problem.
- Identify where the information might be found. Talk to experts or other authorities.
- Gather the needed information.
- Using the information gathered, list possible solutions to the problem. List as many solutions as you can think of, without judging whether they are good or bad. Quantity is important.
- Evaluate the solutions. Think of the consequences of each one. Think about how difficult some solutions might be to implement.
- Choose the solution that will work best. Provide rationale for decision-making.

Sample Problem Solving Lesson

- State the problem: the problem is to select the best wheel-balancing equipment for an auto body shop.
- Information needed to solve the problem:
  - — Type of wheel-balancing problems that make up most of the business in the shop
  - — Kinds of wheel balancers on the market and what they can do
  - — Cost of various wheel balancers
  - — Size of various wheel balancers relative to amount of space available in the shop
  - — Ease of operation and ease of learning how to operate wheel balancer
  - — Frequency of needed repairs for various wheel balancers
  - — Frequency of need for replacement of various wheel balancers
- Gather the information needed:

Bubble Balancer	Spin Balancer	Electronic Balancer
Low cost	Most popular in industry	Expensive
Simple to operate	Only does static balancing	Most versatile
Only does static balancing	Operates on-the-vehicle	On-the-vehicle
Only operates on wheels that are off-the-vehicle	Potentially the most dangerous wheel balancer	Cannot take physical abuse
Useful for 90% of balancing complaints		

- Where information might be found:
  - — Auto shop owners
  - — Wheel balancer manufacturers
  - — Wheel balancer repair shops
  - — Teachers of auto shop classes
- Possible solutions to the problem:
  - — Bubble balancer
  - — Spin balancer
  - — Electronic balancer
- Evaluate the consequences of choosing each of the types of wheel balancers:

Bubble Balancer	Spin Balancer	Electronic Balancer
We will have to turn away 10% of balancing business, but machine is low cost.	If we have one accident, it will wipe out any profits we have made.	Likely to break due to mishandling and expensive to repair or replace.

- **Solution:** Buy the bubble balancer.

Beyer (1984) provides some general guidelines to help disadvantaged students overcome learning problems and improve cognitive and metacognitive skills. Teachers should guide students to:

- be consciously aware of what they are doing and <u>how</u> they are doing it;
- avoid being distracted by other inputs competing for attention;
- observe the skill being modeled;
- engage in frequent, intermittent practice of the skill;
- use feedback received during practice to correct their own performance of the skill;
- talk about what they are doing as they engage in the skill;
- learn skills at a time when they need the skill to accomplish a content-related goal; and

- practice the skill in contexts other than the one in which the skill was originally introduced.

In addition to having poor cognitive and metacognitive skills, disadvantaged students tend to believe that they have little control over their success or failure in school. This has been called "learned helplessness," and typically leads to a serious decline in motivation resulting in impaired academic achievement. Covington (1984) believes that students relate their self-worth to academic success, and when disadvantaged students compete with high achievers, they perceive academic success as unattainable. Covington further proposes that, in order to maintain a sense of self-worth, disadvantaged students choose at a young age to withdraw from the competition, and become apathetic with regard to school. Non-involvement and unwillingness to try become a defense mechanism for students, and a way of avoiding failure. "If I don't try, then I can't fail."

The challenge for teachers is to make students believe that they can succeed if they put forth a reasonable effort. One way to do this is to divide larger classroom assignments into small, easily achievable segments at which students can succeed, and to provide a wide variety of such successful experiences.

Weiner (1983) suggests that teachers not attempt to entice disadvantaged students to participate in classroom activities by saying that the task they are being asked to perform is easy. Saying a task is easy leads to students feeling indifferent if they succeed (after all, the task was easy) and embarrassed if they fail (I must be really dumb if I can't do this easy task). A better approach is to tell students to give it their best effort. **When students do have a successful experience, reinforce the idea that the reason for the success is the persistent effort they put forth.**

Changing the academic performance of disadvantaged low-achievers is not a simple task. Inherent in this resource guide, however, is the belief that it can be accomplished. **It will require that teachers overcome student apathy so that students are willing to reinvest in the learning process.** It will also require that teachers incorporate into their teaching the cognitive and metacognitive strategies described in the pages that follow.

Resources

The following are available from the Los Angeles County Office of Education, 9300 East Imperial Highway, Room 246, Downey, CA 90242-2890; (213) 922-6167.

Gender Expectations and Student Achievement (GESA). (1984). An inservice education program focusing on the connection between teacher expectations of student achievement based on gender, and the performance of the student.

Teacher Expectations and Students Achievement (TESA). (1990). Manual describing an inservice education program which focuses on the connection between teacher expectations of student achievement and the performance of the students. Contains strategies to help teachers demonstrate increased expectations of low achievers. **VOICE #07086-PRO.**

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Brophy, Jere. (1986). Research linking teacher behavior to student achievement: Potential implications for instruction of Chapter 1 students. In Designs for compensatory education: Conference proceedings and papers. Washington, DC. (Eric Document ED 293 914).

California Department of Education, Home Economics Education. (1988). Promoting student achievement: Teaching behaviors that work. VOICE #07819.

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Dunn, R., Dunn, K., & Price, G. E. (1989). Learning style inventory. Lawrence, KS: Price Systems.

Ekstrom, R., Goerty, M., Pollack, J., & Rock, D. (1986). Who drops out of high school and why? (Findings from a national study.) Teachers College Record, 87 (3), 356-373.

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Jones, B. F. (1988). Text learning strategy instruction: Guidelines from theory to practice. In E. Goetz, P. Alexander, & C. E. Weinstein (Eds.), Learning and Study Strategy Research: Issues in Assessment, Instruction and Evaluation. New York: Academic Press.

Myers, I. B. (1975). Manual: The Myers-Briggs type indicator. Palo Alto, CA: Consulting Psychologists Press.

Presseisen, Barbara Z. (Ed). (1988). At-risk students and thinking: Perspectives from research. Washington, DC: National Education Association and Research for Better Schools.

Wehlage, G., & Rutter, A. (1986). Dropping out: How much do schools contribute to the problem? Teachers College Record, 87 (3), 374-392.

Weiner, B. (1983). Speculations regarding the role of affect in achievement-change programs guided by attribution principles. In J. Levine, & M. Wang (Eds.), Teacher and student perceptions: Implications for learning, (57-73). Hillsdale, NJ: Lawrence Erlbaum.

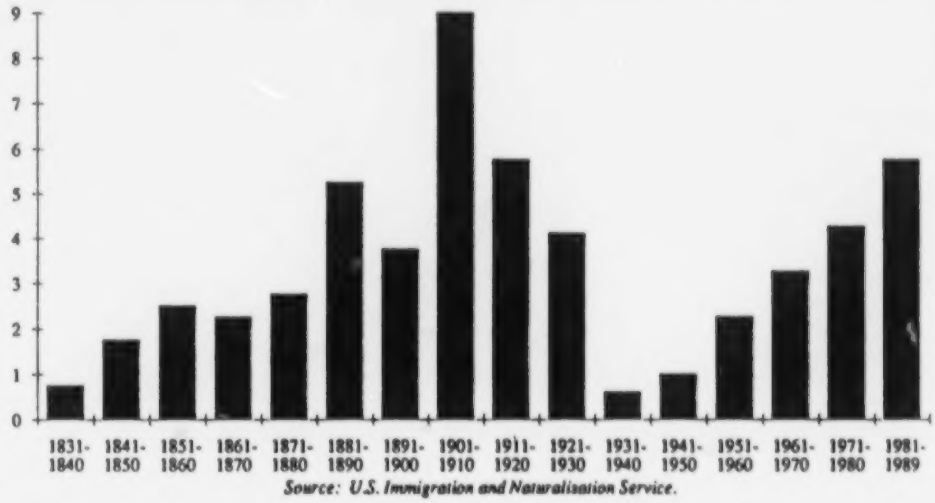
Limited-English Proficient Students

In the Carl D. Perkins Vocational Education and Applied Technology Act of 1990, the limited-English proficient (LEP) student is classified as a disadvantaged student.

The immigration wave of the 1980s was the second highest in American history, with almost six million people entering the United States. Approximately 40 percent of the immigrants came from Asian nations, with the greatest number of these immigrants coming from the Philippines. An additional 40 percent came from Mexico, Central America, and the Caribbean nations. Another ten percent came from the European countries and the remainder from the rest of the world.

LEGAL IMMIGRATION TO THE UNITED STATES

Legal immigration to the U.S. in the 1980s was the highest since the peak decade 1901-1910. Figures in millions of immigrants.



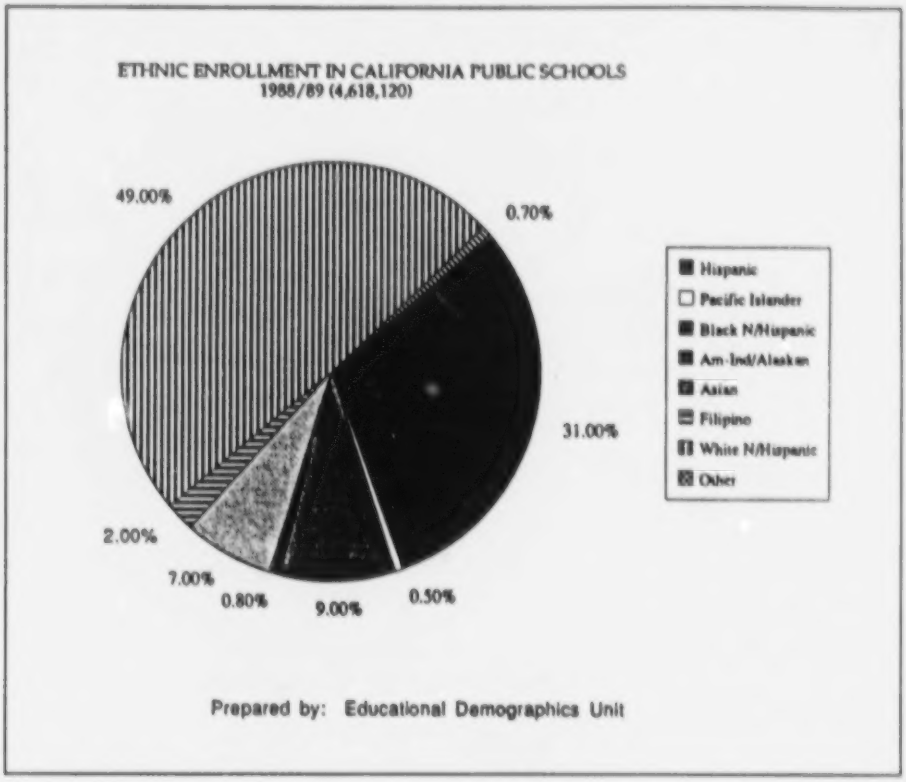
Source: U.S. Immigration and Naturalization Service.

This wave of immigrants has transformed American classrooms. New students with a variety of languages, backgrounds, and cultures have joined an already diverse student body in English-speaking classrooms. They have been asked to learn a new language, acquire new habits, and adapt to a new lifestyle and environment. Teachers often have a limited knowledge of the culture, lifestyle, values, beliefs, and ideals of their new students. Parents and students may have unrealistic expectations of American schools. Adding to this is the natural tendency of all human beings, whether teachers or students, to be suspicious of the unfamiliar. Simple interpersonal actions, such as eye contact, speed and loudness of speech, and ways of showing respect, vary from culture to culture. Misunderstandings are inevitable unless teachers make great efforts to learn about the native cultures of the students and teach them to understand and adapt to American work-related behaviors.

In addition to cultural differences, language differences are a major factor in working

with LEP students. Since most classroom information is conveyed through lecture, discussion, or reading, instructional techniques need to be modified to increase student comprehension.

Because many LEP students are enrolled in career-vocational education programs to help prepare for employment, it is essential that they have an accurate picture of the American world-of-work and of the opportunities available within the California



educational system. Career-vocational education programs for LEP students should provide extensive counseling and guidance programs and services including orientation, career planning, assessment, job development, and job placement.

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Gingras, R.C., & Careaga, R.C. (1989). Limited-English proficient students at risk: Issues and prevention strategies. New Focus, (10). Silver Springs, MD: National Clearinghouse for Bilingual Education.

Teaching Limited-English Proficient Students

Teachers can be more effective in working with limited-English proficient students if they employ a few simple spoken and written language strategies.

Spoken Language

- Learn to pronounce the students' names correctly.
- Learn a few common phrases in the languages spoken by students and use them in teacher-student interactions. Students tend to work especially hard for teachers who demonstrate caring by reaching out to students.
- Limit the amount of time spent lecturing.
- Speak slowly and distinctly, but avoid the tendency to speak at a level louder than that used with English-speaking students.
- Provide students sufficient time to process what is being said by allowing a minimum of six seconds for a response.
- Do not ask questions that require a yes or no answer. LEP students may answer yes to avoid being disrespectful. Ask who, what, when, where, and why questions.
- Use gestures, actions, and body language to reinforce concepts.
- Speak in clear, simple, short sentences.
- Check comprehension by asking students to paraphrase what has been said.
- Use the same terms and expressions consistently. Write them on the board or overhead projector. LEP students may become confused if oral language is too varied.
- Repeat nouns instead of using pronouns; i.e., the cubicle curtain is around the patient's bed, the cubicle curtain is pulled when the patient is being examined.
- Accompany lectures with demonstrations, charts, pictures, and other visual aids.
- Have students do return demonstrations to display comprehension.
- Include verbal and non-verbal activities in each lesson.
- Tape record lectures and lend the cassettes to students so that they can hear the information more than once.
- Use advance organizers (summarizing the main point before a lecture) so students can prepare for the topic being discussed.

- Summarize main points frequently during the lecture and again at the end of class to reinforce key concepts.

- Utilize cooperative learning. LEP students may find cooperative groups less threatening than being asked to speak out in a large class.

Written Language

- Create safety signs and displays in students' native languages as well as in English.

- Utilize written materials on a variety of reading levels, and have important points underlined. Supply vocabulary lists.

- Put textbooks and other written materials on tape for individual student use.* Use the Language Master.

- Modify textbooks to make them easier for LEP students to read by breaking up long sentences into shorter ones, adding illustrations, providing vocabulary activities, and using lists instead of paragraphs when possible.

- Provide students with bilingual dictionaries and encourage them to look up new and unfamiliar words.

- Have students dictate their community classroom experiences to you, an aide, or another student. Use resulting individual logs for reading reinforcement activities.

- Arrange for classroom aides, tutors, or community volunteers to provide individual assistance in reading or in translating instructional materials into a student's native language.

Resources

Bradley, Curtis, & Friedenberg, Joan. (1988). Teaching vocational education to LEP students: Handbook for instructors who work with LEP students. Includes specific teaching strategies and suggestions for curriculum development. **VOICE #01529.**

Bradley, Curtis, & Friedenberg, Joan. (1988). Vocational training for LEP's ten tips for teachers. Meridian Education Corp. Filmstrip, cassette, and instructors guide listing ten suggestions for career-vocational education teachers who work with LEP students. **VOICE #02427AV.**

California Department of Education, Bilingual Education Office. (1984). Individual learning programs for limited-English proficient students: A handbook for school personnel. Sacramento, CA: Author.

California Department of Education, Office of Bilingual Bicultural Education. (1981). Schooling and language minority children: A theoretical framework. Sacramento, CA: Author. Los Angeles: CSU Evaluation, Dissemination, and Assessment Center.

California Department of Education, Office of Bilingual Bicultural Education. (1982). Basic principles for the education of language minority students: An overview. Sacramento: Author.

Chinatown Resources Development Center. (1985). Vocational English for limited-English proficient students. San Francisco: Author, for the California Community Colleges. Describes promising practices in education programs for LEP students. Contact Chinatown Resources Development Center, 655 Geary Street, San Francisco, CA 94102; (415) 775-8880.

Consortium on Employment Communication Center for Career Studies. (1986). VESL (Vocational English as a Second Language): Making employment training work for limited-English proficient participants. Long Beach: California State University. Manual describes the four approaches to employment-related training for LEP adults and the selection and use of teaching materials. **VOICE #05900, 02201.**

Friedenberg, Joan. (1990). A model program for serving LEP students. A 40-minute videotape and accompanying materials available through VERS.

Friedenberg, Joan, et al. (1988). Serving limited English-proficient (LEP) students. Series of four modules to assist vocational teachers to serve LEP students more effectively. **VOICE #01951.**

For specific language groups, see also:

California Department of Education. (1989). Handbook for teaching Cantonese-speaking students.

California Department of Education. (1989). Handbook for teaching Portuguese-speaking students.

California Department of Education. (1987). Handbook for teaching Japanese-speaking students.

California Department of Education. (1986). Handbook for teaching Pilipino-speaking students.

Dinh Te, Huynh. (1988). The Indochinese and their cultures. San Diego: Multifunctional Resource Center, Policy Studies Department, College of Education, San Diego State University; (619) 594-5193.

Douglas, Denise, et al. (1984). Career planning for Chicano/Latino students. C/VEG Publications, Santa Clara County Office of Education, 100 Skyport Drive, MC236, San Jose, CA 95115; (408) 947-6756. Designed specifically for Chicano or Latino community college students with consideration given to the special needs of these students.

Education Evaluation and Research, Inc., & ARC Associates, Inc. (1985). Vocational education resource package for a career development curriculum for Indochinese. Available through the California Community Colleges, 1107 Ninth Street, Sacramento, CA 95814; (916) 445-8752. A comprehensive career development curriculum designed to meet the specific linguistic and cultural needs of Vietnamese, Cambodian, and Laotian students with limited English skills.

Evaluation, Dissemination and Assessment Center. (1983). Handbook for teaching Korean-speaking students. Los Angeles: California State University. Designed to assist school districts in providing effective bilingual education services for students of Asian and minority language backgrounds.

Hawkins Katz, Patricia. (1984). Career development for Indochinese: A curriculum guide. C/VEG Publications, Santa Clara County Office of Education, MC 236, 100 Skyport Drive, San Jose, CA 95115; (408) 453-6624. Contains over 60 hours of lessons designed to help Vietnamese, Laotian, and Cambodian students make effective career choices.

Hawkins Katz, Patricia. (1986). Career counseling materials and techniques for use with Vietnamese. C/VEG Publications, Santa Clara County Office of Education, MC 236, 100 Skyport Drive, San Jose, CA 95115; (408) 453-6624. Designed for counselors, this manual covers the most frequently asked questions about the Vietnamese and their culture, provides strategies for meeting both long and short-term career development needs, and contains an extensive resource section.

Hispanic youth-dropout prevention (Report of the task force on the participation of Hispanic students in vocational education programs). Spanish and English Versions. **VOICE #05296.**

Each subject area has developed material for LEP students that is content specific. To find out what material is available in your discipline, contact VOICE and use your subject area and LEP as descriptors.

Community/Education Resources

Business Education Consultant Service (BECS) will provide a consultant to assist teachers and/or administrators in providing services to LEP students in business education classes. Contact:

- Joyce Williams or Joyce McLean, Regional Supervisors, Career-Vocational Education Division, Business Education Unit, located at the Business Education Center, College of Business Administration, California State Polytechnic University, 3801 West Temple Avenue, Pomona, CA 91768-4038; (714) 869-2387.

- Charlie Brown, Career-Vocational Education Division, Business Education Unit, Oakland Regional Office, (415) 464-0955.

- Lee Murdock, Career-Vocational Education Division, Business Education Unit, Sacramento Sub-Regional Office, (916) 323-9676.

California Industrial Technology Education Consortium (CITEC) will provide assistance, using MERGE consultants, in working effectively with LEP students in Industrial Technology classes. Contact:

- Region 1: Imperial and San Diego Counties, Dennis Dirksen, CITEC Regional Supervisor, (619) 594-1490 or 594-6812. Dennis Turner, Career-Vocational Education Division Regional Supervisor, (916) 445-5079.

- Region 2: Riverside, Inyo, and San Bernardino Counties, Gary Brady, CITEC Regional Supervisor, (714) 387-4448. Harry Crosthwaite, Career-Vocational Education Division Regional Supervisor, (714) 387-4433.

- Region 3: Santa Barbara, San Luis Obispo, and Ventura Counties, Judy Mason, CITEC Regional Supervisor, (805) 388-4421. Berlin Parker, Career-Vocational Education Division Regional Supervisor, (213) 620-3231.

- Region 4: Kern, Kings, Tulare, Madera, Merced, Mariposa, Tuolumne, Stanislaus, and Fresno Counties, Tom Westerfield, CITEC Regional Supervisor, (209) 264-9767 ext. 25. Karl Jacobson, Career-Vocational Education Division Regional Supervisor, (916) 323-9675.

- Region 5: Solano, Alameda, Santa Clara, San Benito, Monterey, Santa Cruz, San Mateo, San Francisco, and Contra Costa Counties, Dick Ellis, CITEC Regional Supervisor, (415) 942-3304. Paul Sciranka, Career-Vocational Education Division, (415) 464-0955.

- Region 6: Napa, Lake, Mendocino, Humboldt, Del Norte, Marin, and Sonoma Counties, Bud Cavallini, CITEC Regional Supervisor, (707) 527-2996. Norm Meyers, Career-Vocational Education Division Regional Supervisor, (916) 323-9680.

- Region 7: San Joaquin, Calaveras, Alpine, Amador, El Dorado, Placer, Yolo, Colusa, Sutter, Yuba, Nevada, Sierra, Glenn, Plumas, Tehama, and Sacramento Counties, Tim Thrailkill, CITEC Regional Supervisor, (916) 991-6643. Bill Callahan, Career-Vocational Education Division Regional Supervisor, (916) 323-9678.

- Region 8: Los Angeles County, Bill Gray, CITEC Regional Supervisor, (213) 728-5265. Berlin Parker, Career-Vocational Education Division Regional Supervisor, (213) 620-3231.

- Region 9: Orange County, John Dewey, CITEC Regional Supervisor, (714) 879-8714. Quentin Swan, Career-Vocational Education Division Regional Supervisor, (213) 620-3424.

- Region 10: Shasta, Trinity, Lassen, Siskiyou, Butte, and Modoc Counties, Ed Wilson, CITEC Regional Supervisor, (916) 246-1700. Norm Meyers, Career-Vocational Education Division Regional Supervisor, State Consultant Explorations Technology (916) 323-9680.

Professional Development Consultants for Health Careers will provide a consultant to assist teachers and/or administrators in improving services to LEP students in health careers programs. Contact Beverly Campbell, Career-Vocational Education Division, Sacramento, (916) 445-3611.

***Tape Duplication Center/Clearinghouse Depository Center** will put your books and other written materials on tape for the cost of a replacement tape (free if you send blank tapes). California Department of Education, P.O. Box 944272, Sacramento, CA 94244-2720; (916) 445-1290.

Vocational Education Resource System (VERS) will assist the staff in assessing and improving the services being provided to special needs students including LEP in all vocational subject areas. Contact Tony Apolloni, Project Director, Sonoma State University, (707) 664-2416.

A World of Difference is an inservice training project aimed at reducing prejudice and promoting intergroup understanding. Teacher training workshops are held throughout the state and participants receive a Teacher Study Guide with information about cultural differences and suggestions for classroom lessons. There is no cost for this service.

Contact Cynthia Esty at (916) 489-9141, Marjorie Green at (213) 446-8000 or Martin Cano at (415) 546-0200 for additional information.

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Vernon, Valerie J. (1984). Vocational education for limited-English speaking students: A handbook for educators. Philadelphia, PA: Temple University, Department of Vocational Education.

The Multi-Cultural Classroom

It is not unusual for eight different languages to be spoken in a single California classroom. This is the tip of the iceberg, however, for each language represents one or more cultures, each of which has different values, beliefs, and ideals. Today's career-vocational teacher must help students negotiate cultural differences and build toward a common workplace culture.

Not all people from the same culture have the same values and beliefs. There are tremendous individual differences. For this reason, and because we can't necessarily identify the culture in which the student was raised, it is necessary to be extremely careful when making cultural assumptions, as is illustrated in the example below.

Cultural Interpretations of Widening of the Eyes

Significance	Intention	Culture
Really!	Surprise, wonder	Dominant Anglo group
I resent this.	Anger	Chinese
I don't believe you.	Challenge	French
I don't understand.	Call for help	Hispanic
I'm innocent.	Persuasion	African American group

(Source: Mehrabin & Wiener, 1967)

Nevertheless, an awareness of the general cultural and linguistic values of minority students is an essential tool for the career-vocational education teacher who provides services to these populations.

Cultural Characteristics of Southeast Asian Students
(Vietnamese, Cambodian, Hmong, Korean, Lao, Filipino)

In general, teachers may experience the following behaviors and attitudes in students. These behaviors and attitudes will, of course, vary depending on the individual history of the student.

- Asians feel a great loyalty to their families and try to maintain harmony within the family and in all social interactions. Working and learning are done not only for the individual, but for the sake of the family as well. Many Southeast Asian students are hard workers and high achievers.

- Asian students expect classrooms to be serious, reserved, and formal. They expect discipline and heavy workloads, and may be loathe to actively participate in classroom activities, because they believe that they are supposed to be passive recipients of information.

- Asian students have their own belief systems which are very different from those of western culture.

- Time is flexible, and punctuality is not prized, except in cases of extreme importance. This means that students may be unconcerned about being late to class or for a job interview.

- Teachers are highly respected for their knowledge. It is improper for students to maintain steady eye contact with teachers and other respected persons. This means that Southeast Asian students may not look at the teacher in one-to-one interactions.

- Students generally do not say "I don't know" or "no" because they believe that it is a sign of disrespect and will hurt the teacher's feelings. Students may nod their head in affirmation, but that generally is done to be courteous, and may or may not indicate comprehension.

- Nonverbal gestures have a different meaning for Asians than they do for persons of European descent. For example, the head is considered sacred by Vietnamese, Hmong, Cambodian, and Laotian peoples, and therefore must not be touched.

- Only a minority of Laotian students were literate prior to the Communist takeover, and because so many Laotian refugees lack basic literacy skills in their native language, they find it extremely difficult to learn English. This is generally not true for Filipino, Vietnamese, and Cambodian students.

Ms. Aiello came to her Friday Nurse Assistant class dressed in an attractive white suit with an owl-shaped gold pin on her jacket. Her LEP students acted strangely, markedly different from their usual behavior, and were particularly unresponsive to her questions about charting, which they had been studying all week. When class was over, Ms. Aiello went to the teacher's lounge where she recounted the peculiar behavior of the class. She was told by a bilingual aide that for Southeast Asian students the owl signals impending doom, and white is the color of mourning. Ms. Aiello's students were afraid to talk to her, for fear that somehow it would mean their demise.

Cultural Characteristics of Chinese Students

The following examples are primarily for first-generation students.

- Chinese families view education as the most important means of upward mobility and have great respect for school personnel.

- Parents and teachers both have clearly-defined roles. Parents are responsible for teaching proper behavior and morals. Teachers are responsible for reinforcing the moral values taught at home and for teaching academics in school. Children who misbehave in school cause their parents great embarrassment.

- Maintaining the home culture and native language is important, and many children attend Cantonese language schools on Saturdays or after school.

- Elderly people are venerated and young people are expected to be passive and reticent in interactions with them. This behavior is extended to teachers and respected persons of all ages. Children do not presume to

express themselves freely and are taught instead to listen and watch in order to learn.

Cultural Characteristics of Japanese Students

The following statements are based on the Japanese view of the role of education in their society.

"It was your typical high school awards ceremony. The Asian kids won all the academic awards, and the American kids won all the important stuff."

- Japanese parents view education as the single most important key to their children's future. Education is valued for its contribution to getting a high-paying job, and for the social status that is accorded those who were educated at the "right" schools.

- Japanese education is intense and competitive. Distinctions in individual ability are drawn early, and only academically advanced students are admitted to the most prestigious college-preparatory junior and senior high schools.

- To prepare for entrance examinations to high school and college, most Japanese students enroll in supplementary schools called *juku*. Students attend *juku* after school, on weekends, and during vacations.

- Teachers are esteemed and considered role models in the community. They are expected to be socially conservative and refrain from behavior of marginal propriety in the traditional Japanese culture.

- Although parents maintain close contact with their child's teachers, they generally defer to the teacher's judgement about school matters and hesitate to express opinions that differ from the teacher's.

Cultural Characteristics of Hispanic Students

Many Hispanic students of Mexican origin maintain close familial ties with relatives in Mexico, which helps reinforce their culture.

- Hispanic students are very family oriented, and family obligations take precedence over personal concerns. Cooperation is encouraged, competition discouraged. Students will be absent from school in order to provide child care to a younger sibling, or actually leave school for several months to accompany the family back to their native country.

- Hispanic families are patriarchal. Females who are more successful than their fathers and husbands are thought to bring disgrace on the family. Thus, many female Hispanic students may exhibit limited aspirations for their future careers.

- Hispanic families have a tradition of resignation to larger forces. This often means that it is difficult to get Hispanic parents to come to school for parent meetings, because they feel there is nothing they can do to change the way things are.

- Many Hispanic families value work over education. They may dream of returning to their country with enough money to retire, or buy a business and earn the respect of their neighbors. This may lead to students being taken out of school in order to work and save money.

- There is an emphasis on carrying out directions carefully. Students expect concrete and explicit instructions from their teachers, and may experience difficulty if asked to select their own learning activities. This should not be interpreted as laziness.

- Students are reluctant to ask the teacher to explain or repeat something they did not understand because they feel it would be inappropriate to "bother" the teacher. The fact that students don't ask questions should not be interpreted to mean that they understand. As a comprehension check, students should be asked to paraphrase.

- Interpersonal reality, which is different from objective reality, is often used to make others happy by telling them what they want to hear. For example, an employee will say that a project is finished when it has not yet been begun, or a student may say homework has been done when that is not the case.

Cultural Characteristics of African-American Students

Although most African-American students are not LEP students, they come from a culture that, in the past, has been poorly understood by mainstream white culture. Therefore, information about the African-American culture is included.

- Emotions and feelings are emphasized and spontaneous personal expression is encouraged. Students may speak out and use language that may seem inappropriate to someone not of their culture. This should not be interpreted as confrontational.

- Oral/aural modes of communication are preferred and the ability to use alliterative, metaphorically colorful, graphic forms of spoken language, such as rap, is emphasized and cultivated. Students may have poor standard English skills, but excellent communication ability.

- Many African-American students are influenced by cultural inversion which is defined as a tendency to regard a cultural behavior, event, or entity as <u>not</u> black because it is characteristic of whites. In school, this leads to blacks regarding athletics as a legitimate and appropriate extracurricular activity. However, African-American students who excel in academic work or are involved in conventional American political and cultural activities may be condemned as acting white (Ogbu, 1986). Therefore, some African-American students don't try to do well in academics.

- A widespread feeling exists among African-Americans that the public schools cannot be trusted to educate African-American children because

of their gross and subtle mechanisms of discrimination. This situation makes it difficult for African-Americans to accept and internalize the school's goals, standards, and teaching and learning approaches, and contributes to the test and performance lag of African-American children (Neisser, 1986). Many African-American students believe that because of discrimination they can never excel in school. Therefore, many are resigned to failure and exhibit self-defeating behaviors in academics.

- African-American students have learned a number of survival strategies, including blaming the system rather than accepting personal responsibility for failure, and believing that societal rewards (including getting good jobs, wages, and promotions) do not depend on the personal efforts advocated by the dominant group (Neisser, 1986). Many African-American students are therefore not motivated to do well in school, because they don't believe it will help them later in life.

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Teaching in the Multi-Cultural Classroom

Secondary students are, first and foremost, teenagers and, as such, struggling to find their own identity. Differences from the norm, in themselves and others, are difficult to accept. The challenge in the multi-cultural classroom is to help students accept and value their uniqueness and the uniqueness of others.

Suggested Strategies for Helping Students to Accept and Value Diversity

Some strategies for helping students learn to accept and value diversity include:

- Utilize persons from other cultures as tutors, aides, and guest speakers to provide role models for students. Invite speakers to talk about their experiences in adapting to mainstream U.S. culture.
- Invite business and industry representatives who are from the countries of origin of students to discuss cultural differences in the workplace.
- Sponsor a potluck picnic and have each student bring a favorite dish from his/her native country, along with a sign showing the name, ingredients, and any special significance. Encourage students to wear traditional clothes on this occasion.
- Encourage cooperative learning so that peer modeling and instruction can be utilized. Provide opportunities for students to do projects which are culturally meaningful to them, such as devising a nutritional diet using a variety of ethnic foods, or preparing to work with culturally diverse patients in a convalescent hospital.
- Allow time for students to share information about their language and customs and how these customs may differ from the U.S. cultural norms and may affect job success.

When Mr. Gilbert asked his students to wear native clothing to the potluck, he did not expect to see Shahana in a sari and Nikes.

Suggested Strategies for Working in a Culturally Diverse Classroom

Teachers can improve their effectiveness in the multi-cultural classroom by using the following strategies.

- Provide information to community classroom supervisors about LEP and/or culturally different students.

During the second semester, Ms. Lindner placed all of her Hospital Occupations students in various community classroom settings. One group of students worked in an acute care hospital. In talking with the students' supervisor, Ms. Lindner was dismayed to hear that some of the patients had complained about D., one of her most talented LEP students. Ms. Lindner identified the objection to D. as one of serious body odor. She was quite embarrassed about discussing the problem with D., but she knew that not discussing it would be a disservice. Although she was aware that diet might be a factor in the problem, she chose to deal first with hygiene to see if that would alleviate the problem. At the first opportunity, Ms. Lindner explained privately to D. that Americans are very particular about personal hygiene, and that it is important to bathe regularly and use deodorant every day. She took D. to the supermarket and showed him the wide array of soaps and other personal hygiene products. There were no further complaints about D., and at the conclusion of the Hospital Occupational program, he was employed by the acute care hospital.

- Learn some of the cultural differences of your students so that you don't misinterpret their behaviors or behave in ways that your students might misinterpret.

- Be especially careful of nonverbal behavior. Body language and facial expressions transcend any spoken language.

- Some foreign-born persons often like to stand closer to other people than Americans do. Don't back away when a student is talking to you. They may think you are unfriendly.

- Try to view activities from the student's perspective. Reverse the situation by mentally putting yourself in the student's place.

- Provide bilingual role models as tutors, guest speakers, or aides. Bilingual personnel can advise the instructor of any cultural biases in the learning environment.

Resources

California Department of Education. (1989). Dreams of flying. Sacramento, CA. $30. A videocassette and study guide featuring a Latino family amid career and college decision-making; addresses cultural differences and non-traditional careers for youngsters.

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Education Evaluation and Research, Inc., & ARC Associates, Inc. (1985). Vocational education resource package for a career development curriculum for Indochinese. Available through the California Community Colleges, 1107 Ninth Street, Sacramento, CA 95814; (916) 445-8752. A comprehensive career development curriculum designed to meet the specific linguistic and cultural needs of Vietnamese, Cambodian, and Laotian students with limited English skills.

Evaluation, Dissemination and Assessment Center. (1983). Handbook for teaching Korean-speaking students. Los Angeles: California State University. Designed to assist schools districts in providing effective bilingual education services for students of Asian and minority language backgrounds.

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Hawkins Katz, Patricia. (1986). Career counseling materials and techniques for use with Vietnamese. C/VEG Publications, Santa Clara County Office of Education, MC 236, 100 Skyport Drive, San Jose, CA 95115; (408) 453-6624. Designed for counselors, this manual covers the most frequently asked questions about the Vietnamese and their culture, provides strategies for meeting both long and short-term career development needs, and contains an extensive resource section.

Onewest Media. Mi vida: The three worlds of Maria Gutierrez. P.O. Box 5766, Santa Fe, NM 87502-5766; (505) 983-8685. Video features Maria Gutierrez, the daughter of Mexican migrant farmworkers, who at the age of 14 entered school for the first time; it portrays Maria's determination to succeed in school, her family's sacrifices for their children, and Maria's scholarly work at the University of California, Santa Cruz.

Community/Education Resources

Cultural Diversity is an inservice training program aimed at promoting cultural awareness and sensitivity. Teacher, counselor, and administrator training workshops are held upon request and participants receive a Cultural Diversity Inservice Training Manual (five modules). Contact Darryl Yagi, American School Counselor Association Human Rights Chairperson at (707) 778-4697.

A World of Difference is an inservice training project aimed at reducing prejudice and promoting intergroup understanding. Teacher training workshops are held throughout the state and participants receive a Teacher Study Guide with information about cultural differences and suggestions for classroom lessons. There is no cost for this service. Contact Cynthia Esty at (916) 489-9141, Marjorie Green at (213) 446-8000 or Martin Cano at (415) 546-0200 for additional information.

Project TIDE (Toward Individual Development through Equity) is an inservice training and resource system for school districts, community colleges, and community based agencies. Project TIDE conducts workshops on cultural differences. Contact Barbara Peterson, Project Director, Rancho Santiago Community College, (714) 667-3347, or contact a TIDE Regional Coordinator:

- Region 1: Freda Walker, TEAM/Project Director, (916) 467-5767
- Region 2: Darlene Lance, Continuation School Principal, Temescal High School, (707) 253-3791
- Region 3: Pam Staley, Business Instructor, Williams High School, (916) 473-5369
- Region 4: Jackie Ray, Workability Program, (916) 921-3704

- Region 5: Ida Johnson, Sex Equity Coordinator, (209) 385-8347
- Region 6: Vicki Stasch, Management Consultant, (209) 733-0634
- Region 7: Joanne Durkee, Sex Equity Coordinator, (415) 685-7340
- Region 8: Pat Kurtz, Coordinator, Special Projects, San Mateo County Office of Education, (415) 363-5439
- Region 9: Jim Malkin, Special Projects, Simi Valley USD, (805) 526-0200, ext. 249
- Region 10: Juanita McDonald, Coordinator, Gender Equity Office, Los Angeles USD, (213) 625-4556
- Region 11: Dr. Pat Whitman, Consultant, Los Angeles County Office of Education, (213) 922-6342
- Region 12: Laurie Manseau, R & D Supervisor, NOCROP, (714) 776-2170
- Region 13: Bill Parquette, Coordinator, Career & Vocational Education, Morongo USD-Vocational Education, (619) 365-4217
- Region 14: Dr. Pat Fitzmorris, Student Well-Being Specialist, San Diego County Office of Education, (619) 223-3769
- Region 15: Ellie Kussman, ROP Superintendent, IVROP, (619) 339-6464.

TRANSITION EXPERIENCES: SCHOOL TO WORK

Career Education

Career education can assist individuals to make rational and informed choices about education and work. Choosing a career has been described as a process that begins during early childhood and proceeds through the entire work life. Initially, career awareness occurs in the context of home and family, with preschool children learning about careers through the work of their parents and extended family. As the individual grows, and a more complete picture of the world is constructed, there is an emerging sense of how the values of a work-oriented society can be incorporated into one's personal life.

Changing social and economic forces mean that many disadvantaged students may not have experienced life with a working parent in the home or internalized the value that work is a meaningful and satisfying part of life. It becomes the job of the schools to acquaint disadvantaged students with the idea that at some time in their lives they will be obligated to earn a living and to motivate them to choose and prepare for a career.

Many disadvantaged students will reach secondary school without career education experiences, however, because career education is no one's purview in the public schools. Without parent role models and no formal curriculum, teachers need to incorporate these activities into the career-vocational classroom. Career education programs should emphasize that, because of the increased concern for equality of education and employment opportunities for all Americans, there are excellent possibilities for those willing to work hard. Career education should provide students with the opportunity to explore non-traditional occupations. It should raise the level of aspiration of disadvantaged students, acquaint them with the full range of career options (especially in new and emerging occupations), and encourage them to focus on future outcomes such as meaningful employment and a quality adult life.

Outcomes of Career Education

Each student should have the opportunity to:

"Being a crossing guard is very important, of course, but I wouldn't recommend making a career of it."

- construct a career plan and know how career planning will benefit her or him;
- become aware of the educational and occupational options available, and the relationship between them;
- be equipped with decision-making skills that can be used in determining educational and career choices;
- discover her or his personal strengths, skills, and abilities and know how to utilize this knowledge in the career selection process;
- develop career plans unencumbered by racial or sexual stereotypes about the appropriateness of specific careers; and
- make a successful transition from school to work.

- Invite an employment counselor or someone from the Employment Development Department who collects and studies labor market information to speak to the class about opportunities in a changing job market, and how to keep ahead of change.

- Lead a discussion about present trends which are creating changes in the world of work. Then direct cooperative learning groups to identify three jobs or careers that are becoming extinct, and three careers that have been created in the last ten years. Discuss the reasons for each.

- Select three jobs within an occupational cluster and have students research how the job has changed over the last five years due to increasing technology. Discuss the changes that are anticipated in the next five years and the reasons for those changes.

- Provide students with current information on career/job opportunities and training leading to nontraditional careers.

- Identify several individuals who have nontraditional jobs, and invite them to speak to the class.

- Have students view a series of videotapes showing people in nontraditional jobs.*

- Provide job shadowing for students in a variety of jobs within an occupational cluster area.

- Assign students to interview adults employed in various jobs within an occupational cluster area. Have the students obtain information on the educational requirements of the job, the career ladder possibilities, salary structure, working conditions, and degree of recognition and satisfaction derived.

- Gather brochures and catalogs from local ROC/Ps, adult schools, community colleges, and four-year colleges and universities. Have students research the requirements for specific occupational programs, and plan a program for career ladder advancement.

- Provide students with the opportunity to use computer-based career information and guidance systems to help them discover a wide range of job possibilities.

- Invite disadvantaged students who are graduates of your program to act as guest speakers and share with students some of the strategies that helped them to succeed.

- Assist students in developing and regularly updating individual education/career plans.

Resources

Association of Computer-Based Systems for Career Information Clearinghouse. Annual

directory of state-based career information delivery systems. Eugene, OR: Author. (1787 Agate Street, Eugene, OR 07403)

Association of Computer-Based Systems for Career Information Clearinghouse. Guidelines for the selection of computer-based career information and guidance systems. Eugene, OR: Author. (1787 Agate Street, Eugene, OR 07403)

Association of Computer-Based Systems for Career Information Clearinghouse. Guidelines for the use of computer-based career information systems. Eugene, OR: Author. (1787 Agate Street, Eugene, OR 07403)

* California Department of Education. Black women on the move. A videotape featuring black women in nontraditional occupations. CDE, P.O. Box 271, Sacramento, CA 95802-0271. Available January 1991.

California Department of Education. (1990). California plan for career-vocational education. Part two: Implementation strategies. Sacramento, CA: Author. Includes strategies to assist disadvantaged students to enter and succeed in vocational education programs. **VOICE #02840.**

California Department of Education. (1979). Choices and challenges: Student guidebook about nontraditional careers. CDE, P.O. Box 271, Sacramento, CA 95802-0271. Cost $2.75

California Department of Education. (1989). Dreams of flying. A videocassette and study guide featuring a Latino family amid career and college decision-making; addresses cultural differences and non-traditional careers for youngsters. CDE, P.O. Box 271, Sacramento, CA 95802-0271. Cost $30.

California Department of Education. (1988). Images: A workbook for enhancing self-esteem and promoting career preparation, especially for black girls. CDE, P.O. Box 271, Sacramento, CA 95802-0271. Cost $6.

California Department of Education. (1983). Sex equity slide/tape presentations with scripts: Apprenticeship in electrical work. CDE, P.O. Box 271, Sacramento, CA 95802-0271. Cost $15.00.

California Department of Education. (1983). Sex equity slide/tape presentations with scripts: Apprenticeship in plumbing and pipefitting. CDE, P.O. Box 271, Sacramento, CA 95802-0271. Cost $15.00.

California Department of Education. (1983). Sex equity slide/tape presentations with scripts: Apprenticeship in sheet metal work. CDE, P.O. Box 271, Sacramento, CA 95802-0271. Cost $15.00.

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to meet the specific linguistic and cultural needs of Vietnamese, Cambodian, or Laotian students with limited English skills.

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National Career Development Guidelines. A five-volume set which contains a comprehensive list of student/client outcomes for each educational level, examples of activities that could be used to achieve the identified outcomes, and competencies needed by counselors to deliver the program. Available through the California Occupational Information Coordinating Committee, 800 Capitol Mall, Sacramento, CA 95814; (916) 323-6544. Trainers can be provided through the COICC to assist a school to upgrade its career guidance program.

U.S. Department of Labor, Bureau of Labor Statistics. Occupational outlook handbook. Washington, DC: U.S. Government Printing Office.

U.S. Department of Labor, Bureau of Labor Statistics. Occupational outlook quarterly. Washington, DC: U.S. Government Printing Office.

Vocational Education Resource System. (1989). Preparing them all. Rohnert Park, CA: Sonoma State University. This report assesses the current state of disadvantaged students in vocational education and makes recommendations for ways to increase their success. **VOICE #00100.**

Vocational Studies Center. Using labor market information for career decision making. Madison, WI: Author, 1025 W. Johnson Street, Madison, WI 53706.

Community Resources

Career Assessment and Placement Center, Whittier Union High School District, 9401 South Painter Avenue, Whittier, CA 90605; (213) 698-8121. Designated as a model "School to Work" program, the Career Assessment and Placement Center provides materials, visitations, phone consultations, and rehabilitation counseling in an effort to meet the needs of high-risk youth of minority heritage who are potential school drop-outs.

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National Career Development Association. (1989). Working in America: A status report on planning and problems. Alexandria, VA: Author.

Employability Skills

Over the past fifty years, the United States has changed from an industrial economy to one that is increasingly information based; i.e., an economy based on the creation, processing, storage, and retrieval of information. This has radically altered the nature of work and of the skills people need to successfully enter the workforce. In a recent survey of 100 IBM executives, the skill most identified as essential for new employees was the ability to function as part of a team. This is a radical departure from the assembly-line employee who was expected to work alone, have minimal interaction with colleagues and follow the instructions of a supervisor. It is anticipated that change will continue to occur, and at a much faster rate than we have seen up to now. One estimate is that by 1995 technological change will be 500 times faster than what has occurred to date. To help our students adapt to these rapid changes means that we must ensure that they are flexible and prepared to constantly update and increase their skills.

A committee of business and industry leaders was convened in California in 1986 to identify the skills the successful employee of today and tomorrow must possess. Beyond the basic skills, the committee identified the following characteristics as generic to all occupations: problem solving/critical thinking; job seeking and job acquisition skills; desirable work attitudes, habits and workplace behaviors; and the ability to adapt to change — all in addition to the specific occupational skills needed to obtain and retain employment. It appears that employers want it all, which creates obstacles for disadvantaged students who may be deficient in one or more of the desired attributes. However, the committee believed that a major function of public education is to prepare youth for higher education and/or productive employment. Because young people today, especially disadvantaged youth, face tough odds entering the labor market, the committee recommended that schools provide extensive opportunities for students to learn general employability skills.

Key Employability Skills

The following skills have been identified by business and industry representatives in California as critical for success in the workplace (UC-Davis, 1986) and should be built into the career-vocational education content. Each student should be provided numerous opportunities to:

- **Develop Job Seeking/Job Acquisition Skills**
  - — Conduct a job search
  - — Prepare a resume, cover letter, and application form
  - — Demonstrate successful interviewing techniques
- **Develop Work Maturity Traits**
  - — Demonstrate positive attitudes toward work and work habits
  - — Work efficiently with a supervisor
  - — Develop effective working relationships
  - — Understand employer expectations
  - — Demonstrate job responsibility
  - — Demonstrate dependability
  - — Demonstrate effective use of time
  - — Demonstrate appropriate dress for the job
  - — Effectively operate job-related equipment and machines.

Infusing Employability Skills

Job Seeking/Job Acquisition Skills

- Have students identify some of the basic rules of good grooming. Using cutout pictures from magazines, lead a discussion of proper and improper clothing and/or grooming for job interviews. Have students explain what is right or wrong in each picture.

- Assign students to interview adults about how they obtained their present job. Students ask the adults to rate the importance of salary, status, recognition, creativity, or personal satisfaction in making their career choices. In class, students discuss and evaluate the adults' choices.

- Plan a field trip to a company personnel office. Have the personnel director distribute company applications for students to fill out, explain interview procedures, and administer employability tests.

- Have students work in small groups to develop a script for a telephone conversation with a local business. In the script they must include the following points:

  — asking for the personnel department;
  — stating their name;
  — inquiring whether applications are being accepted in a specific occupational area;
  — inquiring whether there are specific job openings;
  — identifying the location of the office where applications are processed; and
  — thanking the person for assistance.

- Have two students role-play an interview, with one playing the employer and the other playing the candidate. Give the "employer" a list of the most commonly asked questions to use. Give the class a standardized evaluation sheet and have them rate the candidate or view *The Employer's Choice* videotape available through VOICE. *

- Utilize cooperative learning experiences frequently so students become accustomed to working as a team to solve a problem.

Ms. Garcia's Wood Working class writes resumes to prepare them to look for jobs, and also to help them assess their capabilities and interests. Ms. Garcia explains the purpose of each category of a standard resume, stressing to the students the importance of accuracy and completeness in their writing. Because she knows that disadvantaged students may have difficulty thinking in terms of employers' needs, Ms. Garcia also gives her students brainstorming questions to help them to assess their strengths and work experience. For homework, her students collect the names, addresses, and phone numbers of former employers. Finally, Ms. Garcia asks the class to work in groups to write, critique, and revise their resumes.

Work Maturity Traits

- Have students interview people outside of class to determine what "work ethic" means to them. After sharing their findings with each other in class discussion, have students write their own definition of work ethic, and include several behavioral indicators.

- Have students survey local employers and/or conduct interviews of employees to identify characteristics of a desirable employee. Compile the traits on a composite chart for class discussion.

- Invite a representative from the personnel department of a local business to speak to the class to describe his/her job in terms of the kinds of attitudes expected on the job, how employee attitudes affect productivity and career advancement.

- Have students suggest and list at least eight reasons why a company might fire an employee and then identify which Work Maturity Traits were violated.

  Note to the Instructor: The following are some of the reasons why companies fire employees:

  a. Being careless with their work.
  b. Not making an effort to learn on the job.
  c. Not following work rules.
  d. Not following directions in regard to job tasks.
  e. Often being late for work.
  f. Being absent for work frequently with inadequate reasons.
  g. Talking about the company in a negative manner to friends, co-workers, and customers.
  h. Gossiping about fellow employees and supervisors.
  i. Not using initiative, needing to be told constantly what is to be done.
  j. Wasting time on the job.
  k. Depending on co-workers to perform tasks that he/she should do.
  l. Not cooperating with co-workers and/or supervisors.
  m. Not dressing appropriately for the job.
  n. Taking home small items from the job site.
  o. Not obeying company safety rules.

- Have students identify an occupation and job site that interests them. Have the students interview workers and/or supervisory staff at the job site in regard to the following items:

  a. Employer expectations.
  b. Effective use of time on the job.
  c. Appropriate dress for the job.
  d. Effective working relationships.
  e. Effective work habits.
  f. Attitude toward work.
  g. Job satisfaction.

  As a group activity, students should develop a checklist and then use it to write a summary of the interview. These summaries can be used for group discussion.

- Have students interview other students or adults who have a cultural background different from their own. The interviews should identify and list six or more differences in regard to customs, background, lifestyle, religion, etc. For each of these differences, the student is to indicate what, if any, adjustments are necessary in order to work effectively with that person.

- Have a guest speaker from a retail firm explain how poor customer relations affect his or her business.

- List the traits of a model employee and have each student rate him/herself on a five-point scale for each trait. Have the student select a trait that needs to be improved and write a paragraph about how to improve it.

- Obtain a copy of the dress standards for several businesses. Use this as a basis for small group or class discussions.

Resources

Industry Education Council of California. (1985). Learning to earn, volumes 1 and 2. 1575 Old Bayshore Highway, Suite 106, Burlingame, CA 94010. Pre-employment skills curriculum for high school students focusing on the development of the attitudes, skills and personal traits needed to secure and maintain entry-level employment. **VOICE #08932.**

Janus Books. (1990). The Janus employability skills program. Division of Janus Book Publishers, Inc., 2501 Industrial Parkway West, Hayward, CA 94545. Consists of seven workbooks and a teacher's guide designed for use with disadvantaged and LEP students. Contains easy-reading text and exercises emphasizing competencies in planning a career path, finding job opportunities, completing job applications, preparing for and participating in interviews, keeping a job, and managing income.

* National Center for Research in Vocational Education. (1985). The employer's choice: What works in the job search. Ohio University. Videotape of three students interviewing for jobs. **VOICE #09772-AV.**

Santa Clara County Office of Education. Career development for independent study. C/VEG Publications, 100 Skyport Drive, MC 236, San Jose, CA 95115; (408) 947-6756. Consists of a complete semester course with eleven self-contained student packets, including Instructor Notes, and dealing with assessment, values, interests, and aptitudes.

University of California, Davis. (1986). Model general occupational/employability skills. Provides appropriate instructional strategies and resources for teaching basic skills, pre-employment skills, and work maturity traits. **VOICE #02129.**

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Student Assessment

Federal vocational education legislation requires that disadvantaged students be provided with comprehensive guidance and counseling activities to facilitate the transition from school to post-school employment and career opportunities (PL 101-392). These services are required so that students can make an informed choice about their plans for the future and be motivated to actively pursue a challenging course of study. The importance of guidance and counseling services cannot be overemphasized if disadvantaged students are to be placed in relevant, challenging vocational programs and succeed in their program placements.

Vocational assessment (a comprehensive evaluation process to determine vocational program placement) is an important component of career guidance and counseling. Assessment information should include a review of each student's academic skills, learning strengths, and family background. For disadvantaged students, it is important to learn a great deal about their personal lives, as studies show that disadvantaged students' level of motivation may have as great an influence on successful outcomes as their academic skills.

Student Characteristics to Be Assessed

The following tasks have been identified by business and industry representatives in California as critical for students to do as part of the career selection process (UC-Davis, 1986). Each student should have one or more opportunities for formal or informal assessment to:

- Identify special aptitudes and/or abilities;
- Identify personal interests;
- Identify career interests;
- Identify transferable work skills/work experience;
- Identify personal traits (strengths, values);
- Assess own health habits and, if necessary, develop a plan for good health;
- Identify the work-related ramifications of substance abuse;
- Identify important personal and work values;
- Recognize the differences between needs/wants/values and their role in career decisions;
- Select careers or vocational goals which are consistent with interests;
- Acquire general information about the occupational/career field;
- Identify education, experience, and requirements needed to pursue selected careers ("Career Ladder");
- Develop short and long-term career plans to achieve goals;

- Describe economic and technological trends which may affect the work environment; and

- Identify ways in which employees may have to adapt to a changing work environment.

Outcomes of Student Assessment

The specific objectives of vocational assessment for disadvantaged students are to:

- Identify personal-social strengths and needs; vocational interests and goals; educational competencies such as reading comprehension, writing and mathematical ability; vocational aptitudes and job-specific skills. Disadvantaged students may be unaware of their strengths because attention is typically focused on their weaknesses.

- Compare current competencies and skill levels with characteristics and requirements of training programs or jobs and recommend vocational program options and support services based on assessment results. Many disadvantaged students have an unrealistic view of job requirements; as in the desire to become a doctor without recognition of the need to remediate deficient reading skills.

- Determine the extent to which family and culture may affect the student's ability to succeed in a specific career. In addition to the values, beliefs, and level of aspiration the student may derive from home, the family may also determine the level of resources that will be available to help the student prepare for the occupation, as well as constraints on the student's time.

- Determine the dependability of the student's transportation to and from the program site, the student's child care needs, the state of his/her physical health and the impact of any medication being taken.

- Identify appropriate support services that are likely to facilitate the vocational development of the student.

- Determine why a student is not performing well in a particular vocational placement and prescribe alternative placements or support services.

- Determine the extent and nature of the student's motivation to successfully complete the vocational program.

Studies have shown that students who receive a vocational assessment and are placed in a vocational program based on recommendations resulting from the assessment, perform significantly better on the following variables: effort, attitude toward work, ability to get along with others in the class, taking directions in class, appropriate behavior on the job, ability to accept supervision of the instructor, attention span, ability to complete a job, ability to accept boredom and repetition on the job, quality of work produced, overall performance, and grade-point average (Evans, 1986).

Assessing Disadvantaged Students

Career guidance and counseling activities are conducted by professionally-trained

counselors or technicians. When working with disadvantaged students, the counselor should:

- Be sure the assessment takes place in an especially supportive atmosphere and that the counselor has established good rapport. This is critical to neutralize the low self-esteem and test anxiety typically exhibited by disadvantaged students.

- Include a variety of assessment techniques so that a complete picture of student skills and abilities can be developed. These should include informal assessments such as interviews, a review of school records, and an observation of the student's work performance; and formal assessments such as vocational interest inventories and multi-aptitude test batteries.

- Allow disadvantaged students to repeat vocational assessment tasks if necessary. Vocational assessment instruments are typically normed on an adult population that is experienced in work-related exercises. The validity of the results will not be compromised by permitting disadvantaged students to practice and become familiar with the task.

- Provide adequate time for disadvantaged students to demonstrate their competency, recognizing that these students are often quite slow in performing tasks due to lack of self-confidence, minimal experience or exposure to work-related assignments, personal and social immaturity, and possible limited-English proficiency.

Infusing Student Assessment Into Career-Vocational Education

Career-vocational education instructors can assist with student assessment by:

- Scheduling time to meet with the counselor to discuss the assessment results. Include the student and parent(s) in the discussion.

- Having students create a career portfolio which includes the results of their vocational assessment, information about the courses/programs they have taken, and their work experience record.

- Infusing employability skills curriculum into occupational skills training.

Mr. Montana uses individual projects as an assessment of student progress in his graphic arts class. Students build a portfolio that they can take on job interviews. Mr. Montana also includes an assessment of student behaviors that he and Ms. Paris, the guidance counselor, identified as important in the workplace. Mr. Montana and Ms. Paris feel that a work skills report is valuable for disadvantaged students because they often lack role models for workplace behaviors. As a student completes a project, the student receives the following score card.

WORK SKILLS REPORT

Work Skills Report for _____
Project Description

_____

- ❑ Gets along well with people of different personalities
- ❑ Shows up regularly and on time for activities and appointments
- ❑ Takes responsibility and is accountable for the effects of personal judgements, decisions, and actions
- ❑ Plans, carries out, and completes class activities at own initiation
- ❑ Works well under supervision
- ❑ Works well without the need for close supervision
- ❑ Works cooperatively as a member of a team
- ❑ Works well under pressure
- ❑ Follows instructions or directions in the performance of a specific task
- ❑ Handles criticism, disagreement, or disappointment well.

Comments:

This guarantees that the above named worker has demonstrated the characteristics needed to be a successful employee.

Signed _____ Date _____
Bob Montana, Graphic Arts Instructor

Resources

California Department of Education. (1986). A vocational assessment model for students served by educational and job training agencies. Sacramento: Work Group on Vocational Assessment, Specialized Programs Branch. A comprehensive manual describing how to do multi-stage vocational assessment, including how the assessment information should be used to facilitate appropriate vocational placement. Contains descriptions of the most commonly used vocational assessment instruments.

Janus Books. (1990). The Janus employability skills program. Division of Janus Book Publishers, Inc., 2501 Industrial Parkway West, Hayward, CA 94545. Consists of seven workbooks and a teacher's guide designed for use with disadvantaged and LEP students. Contains easy-reading text and exercises emphasizing competencies in planning a career path, finding job opportunities, completing job applications, preparing for and participating in interviews, keeping a job, and managing income.

Semmel, Dorothy, & Goh, Sharon. (1982). Serving the special needs pupil in vocational education programs: Mainstreaming and program planning. Santa Barbara: University of California, Graduate School of Education. An inservice training program for

secondary vocational educators, providing information on vocational assessment, program modification, and the IEP process. Contains five cassette tapes and corresponding filmstrips. **VOICE #07271AV.**

Youth, Adult and Alternative Educational Services. (1989). Employability competency system program implementation guide. Sacramento: California Department of Education. A comprehensive manual providing assessment which is linked to competencies and curriculum materials. Includes assessment of basic educational skills, pre-employment and work maturity traits, and English as a Second Language.

References

Evans, L. (1986). A study regarding performance in vocational classes of special needs students who received vocational assessments. Paper presented at the Annual Convention of the American Vocational Association. (ERIC Document ED 276 858)

Leconte, P. The uses of vocational evaluation. Vocational Education, 60 (3), 41-43.

Meers, G. (1980). Handbook of special vocational needs education. Rockville, MD: Aspen Systems Corporation.

University of California, Davis. (1986). Model general occupational/employability skills. **VOICE #02129.**

Work Experience/Job Placement

Work experience education is a school-to-work transition service that allows students to work in a supervised job in the community. For many disadvantaged students, participation in work experience education is a viable alternative to dropping out of school because it provides an opportunity to earn money and feel a sense of accomplishment (Kingsbury, 1987). Work experience education is designed to combine supervised paid employment with related classroom instruction and to help students:

- observe and sample a variety of work conditions to ascertain their interest and suitability;
- develop a better understanding of their aptitudes, interests, and personality characteristics;
- reinforce and apply basic skills in reading, writing, and computation;
- expand their social relationships;
- develop positive attitudes towards work;
- know and practice good employer-employee relationships;
- become aware of employment laws and regulations; and
- master specific work requirements of an occupation, such as work tasks, safety, and proper tool and equipment use.

Work experience education programs follow the administrative regulations of the California Administrative Code Title 5. A formal training agreement is written with each employer. The training agreement identifies the responsibilities of the student, the employer, and the parent or guardian (if the student is a minor). An individual work plan is jointly developed by the student, teacher, and the employer outlining the specific objectives that the student is to accomplish.

Work Experience

There are three distinct types of work experience education:

1. exploratory work experience, in which students systematically observe a variety of occupations and may perform, on a limited basis, non-paid work activities;
2. general work experience, in which students participate in on-the-job experiences not necessarily related to their career goals, but which build positive attitudes and work habits and provide an opportunity to apply and reinforce core academic skills; and
3. vocational work experience, in which students engage in supervised, paid employment directly related to their vocational program.

Currently, the majority of students enrolled in work experience education in California are engaged in the general work experience program, and typically spend four hours per

day on the high school campus and up to four hours per day at work. Work sites are approved by the Work Experience Education Teacher-Coordinator to ensure that students have meaningful learning experiences. All students enrolled in work experience education receive additional instruction or counseling related to their placement for the equivalent of one instructional period per week of classroom instruction or counseling, at least two times per semester, by a certificated work-experience education teacher. Work experience education provides students with a unique opportunity to make the transition from "in school" to "at work."

Job Placement

After a disadvantaged student has completed a career-vocational education program, transition services should include assistance in being placed in a job or an advanced training program. Students expecting to enter the labor market directly from high school are entitled to assistance in planning for and being placed in jobs or advanced training. There are three primary components of a good school-based job placement program. They are:

1. **Job Development Services:** The Work Experience Education Teacher-Coordinator establishes connections with people who do the hiring for their companies. A good coordinator talks to people who are aware of job opportunities or who are able to create jobs for specific individuals. Work Experience Education Teachers-Coordinators promote their students to the business sector in the community until the school has developed a reputation for producing competent workers and employers start contacting the job developer. Staff should have access to and maintain contact with a wide variety of business/industry persons. In large urban areas, the Work Experience Education personnel of several high schools should collaborate in order to avoid excessive competition in establishing contacts with employers.

2. **Job Placement Services:** Services focus on teaching students how to seek and find a job. This includes preparation of a resume or career passport,* filling out employment applications, and familiarization with appropriate grooming, dress, and behavior on the job. These skills, taught within career-vocational education programs, are reviewed and refined prior to students following up specific placement service leads and making actual contact with potential employers. In addition, job placement services include confirming job site selection with the student, communicating placement plans to parents and school personnel, arranging for an interview, checking transportation schedules, conducting a final briefing with the student, and accompanying the student on the first day of work.

3. **Follow-up Services:** Disadvantaged students are contacted once they are placed on the job so that work difficulties or student deficiencies can be quickly identified and corrected. Students receive counseling to help them adjust to the work world, and assistance in finding needed additional training or support services. Follow-up contacts provide important feedback regarding the vocational education curriculum and contribute to the school's ability to tailor vocational education programs to meet current job market demands. The follow-up contact also provides an opportunity to ask about other job openings, as well as a chance to say 'thank you.'

   Another kind of follow-up service is the establishment of a "hotline," so

that students can call a trusted teacher or counselor if they are having problems adjusting to a job. Program evaluation and the establishment of a database indicating how well students succeed on the job are also follow-up services that provide information on the adequacy of the program in preparing students for employment. Based on the results of the evaluation, the vocational education program can be modified when necessary.

If one of the fundamental missions of a high school education is to prepare students for employment, then students must be provided with programs and services that have already been shown to work. School-related work experience and job placement programs are examples of programs that work.

Resources

California Department of Education. (1987). Work experience education quality criteria, review manual. Sacramento, CA: Author. Describes the major components of WEE review, compliance, quality, and technical assistance.

Janus Books. (1990). The Janus employability skills program. Division of Janus Book Publishers, Inc., 2501 Industrial Parkway West, Hayward, CA 94545. Consists of seven workbooks and a teacher's guide designed for use with disadvantaged and LEP students. Contains easy-reading text and exercises emphasizing competencies in planning a career path, finding job opportunities, completing job applications, preparing for and participating in interviews, keeping a job, and managing income.

* Los Angeles County Office of Education. (1990). Job finder's guide: How to obtain and advance in the job of your choice. (3d Ed.). A passport available from LA COE, 9300 East Imperial Highway, Downey, CA 90242-2890. (Publ. #90-1-11).

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Kingsbury, David. (1987). Cooperative work experience programs for students with vocational special needs. In Gary Meers (Ed.), Handbook of special vocational needs education, (2d ed.), 168-198. Rockville, MD: Aspen Publications.

Meers, Gary. (1980). Handbook of special vocational needs education. (169-204). Rockville, MD: Aspen Systems Corporation.

INTEGRATION OF ACADEMIC CORE CURRICULUM AND VOCATIONAL CONTENT

Critical Thinking/Problem-Solving Skills

All real learning involves thinking — yet too many students are passive learners waiting to be supplied with correct information rather than actively thinking and problem solving. Poor thinking skills have been identified as a major predictor of low achievement for disadvantaged students, and a contributing factor to their leaving school prior to high school graduation. Studies have shown that many disadvantaged students lack a logical approach to problem solving, and exhibit little concern for accuracy (Anderson et al., 1984; Chance, 1986; Whimbey, 1984). Disadvantaged students have been characterized as intuitive thinkers; i.e., they choose answers based on an impression, a feeling, or a guess, as opposed to using sequential analysis to arrive at an answer. This behavior leads to repeated failure and a belief that the student is powerless to control his/her academic performance. To improve the cognitive processing of disadvantaged students, it is necessary to provide explicit instruction on thinking and problem solving. Research has shown that teaching thinking skills increases basic academic achievement, because students learn to better process what they are being taught (Pogrow, 1988; Soled, 1987).

Key Skills Necessary for Critical Thinking/Problem Solving

The following have been identified by the American Association for Supervision and Curriculum Development (Langrehr, 1988) as core skills that are the foundation of critical thinking/problem solving ability:

- **Focusing skills** — directing one's attention to selected information;
- **Information gathering skills** — acquiring relevant data;
- **Remembering skills** — storing and retrieving information;

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- **Organizing skills** – arranging information so it can be used more effectively;
- **Analyzing skills** — clarifying existing information by identifying and distinguishing among components and attributes;
- **Generating skills** — using prior knowledge to add new information;
- **Integrating skills** — connecting and combining information; and
- **Evaluating skills** — assessing the reasonableness and quality of ideas.

Successful Strategies for Teaching Critical Thinking/Problem Solving

When Focusing on Critical Thinking:

- Impress on students that the goal of instruction is thinking.
- Emphasize that the responsibility for thinking is the student's.
- Prepare students for classroom activities by describing the work to be done and the means to accomplish it.
- Facilitate thoughtful discussions by raising issues for consideration, clarifying and paraphrasing student responses, recording ideas, regulating the pace of the interaction, and having students evaluate alternative points of view.
- Provide sufficient wait time after asking a question to allow students time to think about the answer.
- Utilize "thinking" language — ask students to compare, predict, analyze, hypothesize, apply, suggest solutions, and provide evidence.
- Ask students questions that require sophisticated thinking every day for an extended period of time so that students will develop increased confidence in their ability to formulate answers and express ideas.

"I expect you all to be independent, innovative, critical thinkers who will do exactly as I say."

Sample Statements to Challenge Fuzzy Student Thinking

- Ask students for specific examples when they say "everybody," "always," or "things."
- Ask students what is being compared when they say something is "better," "cheaper," or "nicer."

Sample Questions to Encourage Thinking Responses

What do you predict will happen when...?
Let's analyze this problem.
What hypotheses do you have that might explain...?
What evidence do you have to support...?
Describe the steps you took to get that answer.
What can you do to get started?
What criteria are you using to make your choice?
How do you know you're correct?
If we compare what we've learned previously, how would it fit in?

When Focusing on Problem Solving:

- Develop and discuss a variety of strategies and steps for solving problems prior to undertaking the activity.
- Utilize think-pair-share; i.e., allow individual thinking time, followed by discussion with a partner.
- Ask students to share their thinking with the class when they are in the middle of problem solving and after they have completed the activity.

The students in Mr. Gray's Nursery Operations class are preparing to transplant a flat of petunias. First, Mr. Gray has the class discuss the process for solving the problem. Working in pairs, students identify the steps they will need to take. They share their thinking with the group and identify the relevant information they need to gather. They decide that the relevant information includes how many transplants are in a flat, how many plants go in each pot, how much soil is needed for each pot, how many pots come on a tray. Once the information is gathered, work groups calculate the supplies needed. The groups then actually get the supplies and materials together and transplant the plugs to determine if their calculations were correct. If the answers do not seem correct (there are extra plugs, or extra supplies), the group must determine where they made their error. This process provides an opportunity for disadvantaged students to have the steps of problem solving modeled in a non-threatening environment.

- Ask students to describe strategies they intend to pursue in solving a problem, and to monitor and share how well each different strategy worked.
- Ask students to explain why a particular strategy didn't work, and what plan they have formulated to modify the strategy.
- Teach students to keep a log throughout a problem-solving activity. Review the log and discuss changes in perceptions and strategies as additional data are gathered.
- Share your own problem solving strategies and reasoning with students.

- Use cooperative learning groups to increase reasoning strategies and critical thinking competencies (see section on Cooperative Learning).

> Mr. White has his Recordkeeping class reinforce math and critical thinking skills as they prepare a budget. Students check the job listings and each student chooses a job he/she qualifies for. The salary for the chosen job is considered income. As a group, the class brainstorms expenses they might have in a month. Many disadvantaged students may not have had the experience of preparing a budget, and this exercise helps them to realize the cost of maintaining a household. This is especially important for potential teen parents. Students work in pairs to set up budgets. Expenses are divided into fixed and variable categories. Any money not spent is placed into savings. If there is not enough money to cover the expenses, students must decide what options are available.

Resources

Association for Supervision and Curriculum Development (ASCD). (1989). Toward the thinking curriculum: Current cognitive research (Yearbook). Includes a series of essays defining key concepts of a thinking curriculum. **VOICE #08952.**

Costa, Arthur, & Lowery, Lawrence. (1989). Techniques for teaching thinking. Pacific Grove, CA: Midwest Publications. Provides a set of research-based guidelines and suggested practices to incorporate thinking skills into any subject area. **VOICE #03782.**

EQUALS. Spaces: Solving problems of access to careers in engineering and science. Lawrence Hall of Science, University of California, Berkeley, CA 94720; telephone (415) 642-1823, FAX (415) 642-1055. 141 pp. $15.00. Activities in *Spaces* develop problem-solving skills and inform students about careers in engineering, science, and technology. Students explore their own thoughts about learning math, grapple with statistics about "Who's Where in the Workforce," learn the vocabulary of tools, and even design a park. *Spaces* activities encourage the continued enrollment and participation of female and minority students in math courses by helping to remove some of the fear, mystery, and boredom too often experienced in the mathematics classroom.

Johnson, David, Johnson, Roger, & Johnson, Edythe. (1988). Circles of learning: Cooperation in the classroom. (rev. ed.). Interaction Book Company.

Langrehr, John. (1988). Teaching students to think. Bloomington, IN: National Education Service, 1821 W. Third Street, Suite 21, Bloomington, IN. Provides exercises for students to produce the core thinking skills identified by ASCD.

Ruggiero, Vincent Ryan. (1989). Critical thinking. Rapid City, SD: College Survival, Inc., P.O. Box 8306, Rapid City, SD. Provides exercises to help students gain practical experience in critical thinking while improving their skills in reading and writing.

Community/Education Resources

Project IMPACT (Improve Minimal Proficiencies by Activating Critical Thinking) is an inservice program to assist teachers to infuse thinking skills into all areas of the curriculum. Call for preview videotape. Contact: Dr. Lee Winocur, (714) 964-3106.

References

Anderson, L., Brubaker, N., Alleman-Brooks, J., & Duffy, G. (1984). Making seatwork work (Research Series No. 142). East Lansing: Michigan State University, Institute for Research on Teaching.

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Soled, S. W. (1987). Teaching processes to improve both higher as well as lower mental process achievement. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

Whimbey, A. (1984). The key to higher order thinking is precise processing. Educational Leadership, 42 (1), 66-70.

Mathematics Skills

The information and technological age has increased the need for knowledge of mathematical concepts. Employers have named problem identification, reasoning, estimation, and problem solving as essential workplace skills. Although computers and calculators eliminate much tedious calculation, students still need to understand basic calculating, as well as develop problem-solving ability and mathematical power.

Many students, especially disadvantaged students, lack basic understanding of mathematics. Understanding math is the ability to think critically and apply problem-solving strategies. Disadvantaged students often jump into problem solving without carefully analyzing the problem or monitoring the probable success of their potential solution. They do not expect the situations described in mathematical exercises to be meaningful, and do not question or employ reality checks when they arrive at an answer.

"Two plus two is four. Teachers are adamant about that."

Mathematical skills can be made more meaningful to disadvantaged students by teaching conceptual number sense as it applies to the work world. Math must be problem-based and viewed as requiring more than rote memorization and use of algorithmic procedures. Only when disadvantaged students are able to analyze a problem, plan a course of action, and evaluate the correctness of their answer in light of the specific situation will they qualify for the high-tech, high-paying jobs of the 21st century.

Key Mathematical Skills

The Mathematical Sciences Education Board's Curriculum Task Force (1988) has suggested that students develop the following problem identification and problem solving skills:

- **Representational Abilities:** skills with whole numbers, rational numbers, decimals, and an understanding of place value.
- **Numerical Operations Skills:** mastery of single-digit operations and the ability to identify the "right" arithmetic procedures for various problem situations, to select the appropriate means for carrying them out (mental arithmetic or calculator use), and to perform estimations.
- **Interpretation Skills:** ability to draw inferences from numerical data.

Successful Strategies to Improve Mathematics Skills

Problem Solving Skills

- Build a supportive atmosphere in which students are prepared to tackle unfamiliar problems, and don't feel threatened when solutions are not readily apparent.

- Utilize real world problems that are interesting to students and ones which they want to solve.

> Ms. Shephard asks her Woods class to develop bids for a project involving building a stereo cabinet. Students work in groups as carpentry companies to develop the bids. The companies compete with one another to get the job. First, students in each company calculate the number of board feet needed to produce the cabinet, and the cost of the materials. Then they calculate the amount of tax for the job, and finally decide how much profit is appropriate. They write up their bids and submit the bids to Ms. Shephard. Each company builds the stereo cabinet and compares the finished product with the bids. Students evaluate which company(ies) would have lost money, which were too high-priced to ever get any work, and which could have successfully completed the job with a profit.

- Use on-the-job manipulatives whenever possible (i.e., determining feed and speed of mill cutters). Use computer software that displays representations of the manipulatives as a bridge between the concrete and the abstract.

> Disadvantaged students in Mr. Abbot's Retail Sales class who are weak in math skills are given practice with a cash register. They are given $100 and must make correct change for customers who pay with large bills. The students know that when they are on the job, they must personally make up any shortages in the cash register, so they are highly motivated to practice making change correctly.

- State problems in human terms whenever possible. Take advantage of the fact that disadvantaged students have a great deal of experience with human behavior that can be used to motivate them.

- Divide the class into groups and let each group pursue its own solution to the problem.

- Provide assistance when requested, but don't provide answers.

- Have the groups compare their solutions and explain why they believe in the correctness of their answers.

> Ms. Jefferson's Crop Science students need to determine the acreage of a field. About a third of the class is disadvantaged; weak in problem solving and numerical operations skills. To assist them, Ms. Jefferson conducts a brainstorming session on determining acreage, what measurements are taken, and how to measure accurately. The class goes to the field and are divided into work groups, with the disadvantaged students distributed among the groups. Each group member measures a different portion of the field. Then the groups add up the measurements. Students check with other members of their work group to make sure their answers are reasonable.

- Help students evaluate arguments to determine which ones make sense and why.

- Play devil's advocate and encourage students to defend their solutions.

- Allow time for students to reflect on their strategies in order to generalize from their experience.
- Provide opportunities for students to practice new skills in other contexts.

"I know just enough about math to calculate the probability of my getting to watch TV for the rest of the month."

Problem Identification Skills

Research has shown that more than 60 percent of all high school and college students attempt to solve an unfamiliar problem by using the following behavior: read the problem, make a decision quickly about how to solve it, and pursue that direction no matter what! To help students learn to regulate their own problem-solving behavior, ask them the following questions while they are working alone or with another student on a math problem:

- What exactly are you doing?
- Why are you doing it?
- How does it fit into the solution?
- How does it help you?
- What will you do with the outcome when you get it?

Resources

California Department of Education. (1988). Enrichment opportunities guide: A resource for teachers and students in math science. Sacramento, CA: Author, P.O. Box 944272, 94244-2720.

Carnevale, A., Gainer, L., & Meltzer, Ann. (1989). Workplace basics: The skills employers want. Alexandria, VA: American Society for Training and Development.

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Educationally Disadvantaged Committee, Industrial Education Inservice Project. (n.d.). With the California Department of Education, Office of Vocational Education, Field Operations Section *and* Industrial Education Unit, *and* California State University-Los Angeles, Industrial Studies Department. Learning to Do series:

Learning to do math the automotive way.
Learning to do math the drafting way.
Learning to do math the electronics way.
Learning to do math the metalworking way.
Learning to do math the woodworking way.
(The above are free from VOICE, no VOICE numbers.)

Kruse, Janice. (1988). Classroom activities in thinking skills. Philadelphia, PA: Research for Better Schools, 444 North Third Street, Philadelphia, PA 19123. Includes lesson plans in all core academic areas to improve students' thinking skills. Designed to be used as extensions or expansions of regular class work.

Office of Education and Training Resources (ETR). (1988). Bridging education and employment with basic academic skills. Bloomington: Indiana University School of Education, Bloomington, IN 47405. Defines basic math skills in terms of problem solving and critical thinking. Discusses the bridge between work and education, and how mathematics instruction can be infused into vocational education curricula. VOICE #00199.

University of Texas at Austin. (1988). Student learning activities for applied basic skills series: Mathematics (Part 5 of 7). Provides, in workbook format, real-life applications to mathematics skills, with illustrations of actual tools, forms, and charts. VOICE #01473.

EQUALS Publications

The following publications are available from EQUALS, Lawrence Hall of Science, University of California, Berkeley, CA 94720; telephone (415) 642-1823, FAX (415) 642-1055.

Alper, L., & Holmberg, M. Parents, kids, and computers. The authors give practical advice on how parents can work with their kids at the computer (and maybe even learn from them), how to select software, and how to encourage both girls and boys to explore new technology. Above all, this is a book about attitudes: adults and children can overcome their shyness about computers and have fun together in the process. 145 pp. $5.00.

Assessment of Alternatives in Mathematics: An overview of assessment techniques that promote learning. A review of methods to assess students' mathematics achievement, including looking at students' completed tasks or products (portfolio, writing, investigations, and open-ended questions) and all students' performances or how they are working (through observations, interviews, and questions). Also discusses student self-assessment, gives sample problems, and raises issues that need to be considered. 35 pp. $5.00.

Downie, D., Slesnick, T., & Stenmark, J. K. Math for girls and other problem solvers. A variety of challenging, hands-on mathematics activities, including logic, patterns, creative thinking, spatial reasoning, estimation, observation, and problem-solving stories, plus a ready-to-use plan for the eight-day Lawrence Hall of Science course, *Math for Girls*, with student activities and game sheets. Intended to interest *all* students in mathematics and math-related careers, these activities are appropriate for both girls *and* boys at the elementary and secondary levels. 108 pp. $10.00.

Erickson, Tim. Off & running: The computer offline activities book. A collection of stories and activities from the EQUALS in Computer Technology program. A computer is not needed to do the activities, but the activities teach concepts and skills needed for computer use. Children and adults will enjoy the adventures of Chris and Aunt Bebe as they solve problems related to the thinking skills essential to effective computer use. 145 pp. $12.50.

Get It Together: Math Problems for Groups, Grades 4-12. A collection of over 100 mathematics problems for groups of two to six students, ages nine through adult. The

problems in the book have a wide range of mathematical topics and difficulty, but all have the same format: Six clue cards provide the information needed to solve a problem. Everyone in a group will have to work together since each member has a different part of the information needed for solution. The book also offers advice for teachers on how to introduce and facilitate group cooperative learning in their classrooms, including such topics as assessment, problem solving, and manipulatives. 180 pp. $15.00.

Kaseberg, A., Kreinberg, N., & Downie, D. Use EQUALS to promote the participation of women in mathematics. The EQUALS Handbook describes the EQUALS program which promotes the participation of female and minority students in mathematics. The book provides methods and materials for use by educators at the elementary, secondary, and preservice levels, and includes an annotated bibliography on problem-solving in mathematics and one on sex-fair counseling and instruction. Educators will find the materials useful in work with students, as well as for inservice workshops. 134 pp. $7.50.

Spaces: Solving problems of access to careers in engineering and science. Activities in *Spaces* develop problem-solving skills and inform students about careers in engineering, science, and technology. Students explore their own thoughts about learning math, grapple with statistics about "Who's Where in the Workforce," learn the vocabulary of tools, and even design a park. *Spaces* activities encourage the continued enrollment and participation of female and minority students in math courses by helping to remove some of the fear, mystery, and boredom too often experienced in the mathematics classroom. 141 pp. $15.00.

Stenmark, J. K., Thompson, V., & Cossey, R. Family math. *Family Math is about helping people like and understand* mathematics through doing activities that make math fun and interesting. The book contains over 90 activities that support logical thinking, number exploration, measurement, probability, estimation, geometry, spatial thinking, and the use of calculators. The activities are appropriate for families at home, mathematics inservice, or for Family Math classes. It also contains information on establishing and conducting Family Math classes, including sample lesson plans and resource lists of math materials. 304 pp. $15.00. Spanish edition (*Matematica Para La Familia*) is also available for $15.00.

We all count in family math. A 17-minute film showing scenes from several Family Math classes and the kinds of activities parents and children do together. Available for purchase in both 16mm film version or 1/2" VHS video. Film: $225.00 Video: $35.00.

Community/Education Resources

California Mathematics Project. Project provides an introduction to the new California mathematics framework and the newly developed standards of the National Council of Teachers of Math. Each project offers a four-week intensive summer institute with follow-up during the year. Instructional strategies to implement the math reform movement in the classroom are disseminated. For general information contact Phil Daro, Executive Director, (415) 643-7310. Consult the California Public Schools Directory, p.37, for individual sites and directors.

References

Mathematical Sciences Education Board. (1988, March). A framework for the revision of K-12 mathematical curricula. Final report to the Mathematical Sciences Education Board from its Curriculum Frameworks Task Force.

Perl, Teri. (1990, March). Manipulatives and the computer: A powerful partnership for learners of all ages. Classroom Computer Learning, 20-29.

Pershing, James A. (Ed.). (1988). Bridging education and employment with basic academic skills. Indianapolis: Indiana Commission on Vocational and Technical Education, 325 W. Washington, 46204.

Resnick, Lauren B., & Klopfer, Leopold, E. (Eds). (1989). Toward the thinking curriculum: Current cognitive research. Association for Supervision and Curriculum Development.

Solomon, Gwen. (1990, March). Using technology to reach at-risk students. Electronic Learning, 14-15.

Oral Communication Skills

Oral communication is the principal mode of human interaction and an essential component of most occupations. Good oral communication skills are critical for success in school and on the job. Recent studies have identified communication skills as second only to job knowledge as a factor in work place success (Curtis et al., 1989; Dortch et al., 1984; Young, 1986).

Most teachers and employers depend on oral communication as a primary strategy in presenting information and giving directions, using reading and writing as a reinforcement. For disadvantaged students who may be weak in reading and writing skills, oral communication is even more important as the channel through which most information is transmitted and received.

"First, she tells me how much fun reading is. Then, she assigns me three extra chapters as punishment when I snicker."

Oral communication is composed of speaking and listening, but also includes nonverbal behaviors such as facial expressions and gestures. All of these elements interact to affect one's ability to communicate. Some have suggested that if a discrepancy exists between the spoken words and the accompanying body language, the body language communicates the message. Students must be made aware of the need for consistency between their verbal and nonverbal communication, particularly as they interact in work experience, community classroom, and job interview situations.

The average person spends 9 percent of communication time writing, 13 percent reading, 23 percent speaking and 55 percent listening. Disadvantaged students, who tend to be imprecise in speaking, inattentive when listening, and who non-verbally communicate indifference or antagonism, need to improve their oral communication if they are to be successful.

Key Communication Skills

The following skills have been identified by business and industry as critical for success in the workplace (UC-Davis, 1986) and should be built into the career-vocational education content. Each student should be provided with opportunities to practice:

- Using appropriate nonverbal communication in work-related situations;
- Solving communication problems that may occur on the job;
- Demonstrating positive ways of expressing feelings related to work situations;
- Employing language skills needed for job inquiries and interviews;
- Expressing a point of view to an employer, employee, or a co-worker;
- Using language to persuade;

- Asking appropriate questions to clarify an oral communication;
- Restating or paraphrasing a conversation to confirm one's own understanding of what was said;
- Answering objective questions from a customer or employer;
- Taking accurate notes that summarize the material presented in an oral communication;
- Following oral directions; and
- Interpreting an underlying message in an oral communication.

Successful Strategies for Teaching Communication Skills

When Focusing on Speaking Skills:

- Pair students and have them interview one another. Then have each student introduce his/her partner to the class.
- Assign students to interview someone in a job to which they aspire and report back to the class or to a small group (see Cooperative Learning section). Develop specific guidelines for what makes a good interview.
- Assign students to interview people outside of class and give an oral report to a group of three or four students on their findings. Some topics might include:
  - interview workers to find out what "work ethic" means to them
  - interview employers to identify characteristics of a desirable employee
  - interview program graduates to find out about job opportunities.
- Assign oral reports to groups of students, with each student responsible for a small portion of the presentation.

> Disadvantaged students often have poor communication and presentation skills. Ms. Perry divides her Agriculture Science II students into groups of six and each student memorizes one of the six parts of the FFA Opening and Closing Ceremonies. As a group, the students stand before the class and deliver their part of the ceremony. The groups repeat their presentation every other day for two weeks to improve their delivery. Communication and presentation skills are improved by working in groups, by memorizing a prepared statement, by standing with a group, and by repetition of the presentation.

- Tape (audio or video) students as they give oral reports. Have each student critique his/her own tape for homework. Allow each student to present the oral report a second time.

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Mr. Jarrett requires his Advanced Woods class to make oral safety presentations about stationary power tools. The purpose of the assignment is to learn the safety features of the tools they will be using in class, and to assess students' speaking skills at the same time. The assignment is "real world" related because serious accidents can occur when power tools are being used without thorough knowledge of appropriate safety procedures.

Students are paired for the assignment, with a disadvantaged student and a non-disadvantaged student working as a team. Each team is responsible for part of the presentation.

As a class, students brainstorm criteria for a good presentation. Presentations are videotaped, and the class critiques each videotape.

- Discuss problems that frequently arise in work situations. Have students form pairs and role-play the situations. Have the class provide feedback on the role-play.
- Conduct mock job interviews, videotape the interviews. Let each student critique his/her videotape.
- Challenge students to "code switch" from their own dialect to standard English, so that they will be able to speak standard English in a work situation.
- Utilize an oral communications rating sheet to assess a student's speaking skills and provide feedback on how effectively he/she communicates. *

When Focusing on Listening Skills:

- Serve as a good role model by really listening to your students when they speak.
- Provide students with advance organizers for your lectures to help them listen more effectively.
- Use visual aids to heighten motivation and help students focus on the topic.
- Train students to concentrate on what is being said by frequently asking them to paraphrase the message.
- Teach students the three steps to listening to directions:
  - concentrate on what is being said
  - visualize each of the directions
  - repeat the directions to yourself before you begin.
- Give directions only one time, and frequently lower your voice when speaking to the class.
- Regularly call on non-volunteers, so that everyone is required to listen to the class discussion.

"I can't explain what I just read, because I wasn't listening."

- Utilize training telephones from the phone company so students can practice taking accurate telephone messages.

When Focusing on Nonverbal Communication:

- View the videotape *The Employers' Choice*. Analyze and discuss the effect of the interviewees' nonverbal behaviors.

- Have students role-play job interview situations and observe and list nonverbal behaviors they see other students exhibiting in the role-play.

- Demonstrate distracting nonverbal behaviors by doing the following while lecturing:

  — fixing your hair
  — looking out the window as you speak
  — chewing gum
  — tapping your foot.

  Then lead the class in a critique of your presentation.

Resources

Educationally Disadvantaged Committee, Industrial Education Inservice Project. (n.d.). With the California Department of Education, Office of Vocational Education, Field Operations Section *and* Industrial Education Unit, *and* California State University -- Los Angeles, Industrial Studies Department.

Learning to Verbally and Visually Communicate the:
Automotive way.
Drafting way.
Electronics way.
Metalworking way.
Woodworking way. **VOICE #09382-09386**

Janus Books. (1990). The Janus employability skills program. Division of Janus Book Publishers, Inc., 2501 Industrial Parkway West, Hayward, CA 94545. Consists of seven workbooks and a teacher's guide designed for use with disadvantaged and LEP students. Contains easy-reading text and exercises emphasizing competencies in planning a career path, finding job opportunities, completing job applications, preparing for and participating in interviews, keeping a job, and managing income.

*National Center for Research in Vocational Education. (1985). Assist students in improving their oral communication skills. Professional Teacher Education Module Series. (Category M, Part 4 of 6). Ohio University: Author. Provides practical assistance to vocational teachers on how to improve students' oral communication skills, and includes an oral communications rating sheet. **VOICE #02087.**

National Center for Research in Vocational Education. (1985). The Employers Choice: What Works in the Job Search. Ohio University: Author. Videotape of three students interviewing for jobs. **VOICE #09772-AV.**

References

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Dortch, R. N., et al. (1984). A survey of business communication competencies used by accountants and bankers. (ERIC Document ED 259 351)

University of California, Davis. (1986). Model general occupational/employability skills. **VOICE #02129.**

Wolvin, A., & Coakley, C.G. (1982). Listening. Dubuque, Iowa: William C. Brown Co.

Young, Jerry L. (1986, March). What competencies do employers really need? — A review of three studies. Journal of Career Development, 12 (3), 240-249.

Reading Skills

Students must read proficiently to succeed in today's work force. Reading proficiently involves both the ability to understand what is read and the ability to apply what is read. Reading proficiency is part of the foundation for problem solving.

Studies of academically disadvantaged students show that low achievers tend to dislike reading, are superficial readers who don't expect what is read to make sense, and are more concerned about completing assignments than understanding content. Many disadvantaged students have spent years in remedial reading, often in programs emphasizing phonics skills at the expense of meaning. To compound the problem, few teachers explicitly describe the purpose of a reading assignment, and even fewer provide specific cognitive strategies to use when reading. To improve the reading comprehension skills of disadvantaged students, career-vocational education teachers should:

- describe the purpose of the reading assignment;
- teach specific cognitive strategies to use when reading;
- provide appropriate materials; and
- guide students through the reading.

"Our teachers always said we would regret not learning to read."

Key Reading Comprehension Skills

The following are the skills that were identified by business and industry representatives in California as critical for success in the work place (UC-Davis, 1986) and should be built into the career-vocational education content. Each student should be provided numerous opportunities to:

- Define the appropriate meaning of words in written context;
- Explain the main idea of a written document;
- Read for a specific purpose (i.e., the steps involved in trouble-shooting a system);
- Identify relevant ideas, facts, theories, principles, and time sequence in written material; and
- Distinguish fact from opinion in written material (e.g., it is important only to include facts on a patient's chart, as in "Mr. Kwan, Room 402B. The Patient's lips are blue. They were not blue at 7:00 a.m." This is a fact. "Mr. Kwan is cold," is an opinion.);

- Read and interpret job related materials, such as:
  - notes, memos, letters, employee forms;
  - instruction manuals and other written materials; and
  - company employee handbooks or manuals.

- Read and interpret specialized formats used in:
  - charts, labels, signs;
  - schedules, telephone directories, zip codes; and
  - supply or equipment catalogs.

- Use library card catalogs to locate job-related information;

- Read and follow various types of job-related instructions or directions; and

- Use a standard dictionary to obtain the meaning and spelling of technical words.

Successful Strategies to Improve Reading Comprehension

Describe the Purpose of the Reading Assignment

- Provide students with a focus to guide their reading. Students should know why they are being asked to read, and what specific information they should look for.

> Mr. Shaw, the Agricultural Education teacher, wants his disadvantaged students to conduct an experiment because he knows that concrete experiences will help them understand more abstract concepts. In preparation for the experiment, the class is to read the chapter on experimentation using the scientific method. Mr. Shaw provides a focus for this reading by leading his class in a discussion of various environmental conditions that affect plant growth (i.e., light, dark, water, soil) and predictions of the percentage of seeds that will germinate and grow under various conditions. Next, the students develop specific questions to answer. For example, how do you vary growth conditions? How many plants must have the same condition for us to generalize the result? Finally, students read to find the answers to the questions they formulated, and are then ready to conduct the experiment.

- Have students brainstorm questions they expect the reading to answer.

Teach Specific Cognitive Strategies to Use When Reading

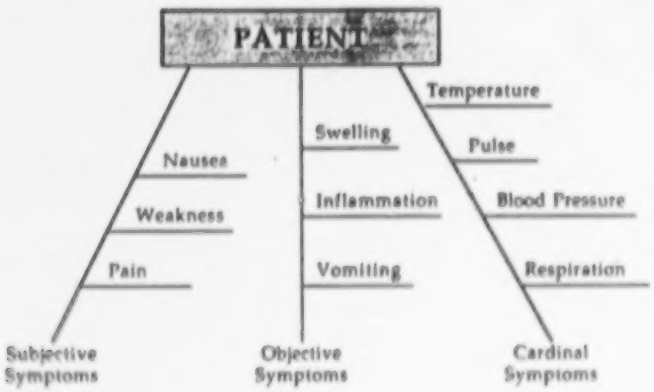
- **Survey:** teach students how to skim a selection to get a general idea of what it is about.

- **Reflect:** teach students to reflect upon what they already know about a subject prior to starting to read. You might say, "Let's brainstorm everything you know about observing a patient." As students respond,

write the answers on the board, or draw a "map" or diagram of their responses.

Sample Map

Observing the Patient



- **Question:** ask students to formulate questions and read to find the answers.

> Knowing that many disadvantaged students have low self-esteem and may need to develop a sense of community within the classroom, Mr. Dyer wants his Home Economic students, as a group, to compete for and earn National FHA awards. He conducts a class discussion on projects that could win FHA awards, having students brainstorm questions about projects that have won awards in the past. Next, students read the feature article on chapter awards in the National FHA magazine, *Teen Horizons*, to find answers to their questions. The students then discuss ideas for projects and a plan of action to compete for awards.

- **Read:** introduce key words, phrases, or terminology in context and then ask students to read. Provide students with a dictionary and help them develop the habit of reading with it. Have students use the dictionary to look up unfamiliar words if they are important to their comprehension of the material. It is not necessary to look up every unfamiliar word.

> Mr. Smith knows that just telling his automotive students to read the chapter, "The Charging System," is not very effective. He prepares his class by displaying a small battery, a car battery, cables, and electronic measuring devices. Since many disadvantaged students know a lot about cars, Mr. Smith capitalizes on this knowledge by having them identify the parts of the charging system and talk about how they work. After the basic parts and tools have been identified, Mr. Smith writes the names of the parts and tools on the board. He then has his students read the chapter, and, in pairs of one disadvantaged and one non-disadvantaged student, answer the written questions at the end of the chapter. When finished, all questions are orally answered as review.

- **Recite:** ask students questions requiring a variety of skills at different levels, such as, "Who can skim and find a word that means...?" "Who can describe the sequence of things to do before...?" "What evidence do you have to support your opinion?" Have students answer the questions aloud and challenge one another if they disagree.

- **Write:** teach students how to map a chapter so they have a graphic summary of the content. *

Provide Appropriate Materials

- Gather written materials used in the workplace (i.e., memos, directives, procedure manuals) and integrate them into classroom assignments.

- Provide materials at a variety of reading levels — from elementary to postsecondary. Computer readability programs are available to determine the reading level of textbooks.

- Have your texts and written materials recorded on cassettes so that students with reading deficiencies can listen to the words as they follow along on the printed page. **

Ms. Carroll knows that disadvantaged students will be more motivated if they can relate classroom assignments to the real world. She has Business Education students act as bank employees. They use a procedure manual from a local Savings and Loan to fill out the necessary paperwork for opening a checking account. Students work in pairs to fill out the forms according to company policy, acting as if their classmates are customers.

Guide Students Through the Reading

- Direct students to read short segments of an assignment to answer specific questions you (or they) have posed.

- Ask students to find and read aloud a passage to answer an oral question.

Agricultural Education students have a problem with plant pests on two of the crops in their garden. They are asked to find out what they need to do in the garden to save the crops. The instructor asks "Who can find and read the paragraph that talks about treatment for aphids?"

Resources

California Department of Education. (1989). Celebrating the national reading initiative.

California Department of Education. (1989). Effective language arts programs for Chapter 1 and migrant education students.

California Department of Education. (1987). English-language arts framework for California public schools.

California Department of Education. (1980). California's demonstration programs in reading and mathematics.

Educationally Disadvantaged Committee, Industrial Education Inservice Project. (n.d.).

With the California Department of Education, Office of Vocational Education, Field Operations Section *and* Industrial Education Unit, *and* California State University — Los Angeles, Industrial Studies Department. Learning to Do series:

Learning to read and write the automotive way.
Learning to read and write the drafting way.
Learning to read and write the electronics way.
Learning to read and write the metalworking way.
Learning to read and write the woodworking way.
(The above are free from VOICE, no VOICE numbers.)

Ellis, David B. Becoming a master student. Rapid City, SD: College Survival, Inc., P.O. Box 8306, Rapid City, SD 57709. Cost $23.25. Provides procedures, hints, examples, tools, and techniques for improving success as a student.

National Center for Research in Vocational Education. (1985). Assist students in achieving basic reading skills. In Professional Teacher Education Module Series. Category M, Part 5 of 6. Ohio University. Provides practical assistance to vocational teachers on how to improve students' basic reading skills. **VOICE #02087.**

*Nemko, Barbara. Strategies for teaching basic skills in vocational education. Presents specific strategies for teaching reading comprehension, vocabulary development, word analysis, mapping, and study skills. **VOICE #01522.**

San Mateo County Office of Education. Entry Standards Assessments (ESAs). Includes tests of reading skills needed to succeed in various vocational areas. **VOICE #06535.**

Community Resources

****Tape Duplication Center/Clearinghouse Depository Center** will put your books and other written materials on tape for the cost of a replacement tape (free if you send blank tapes); (916) 445-1290.

References

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Harris, T. and Cooper, E. (Eds.) (1985). Reading, thinking, and concept development. New York: College Entrance Examination Board.

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Smey-Richman, Barbara. (1988). Involvement in learning for low-achieving students. Philadelphia, PA: Research for Better Schools, 444 North Third Street, 19123.

University of California, Davis. (1986). Model general occupational/employability skills. **VOICE #02129.**

Study Skills

Study skills are techniques and procedures that students use to help them learn and remember information; skills that are essential for most jobs, from entry level through career advancement. Good study skills include time management, note and test taking, concentration, and organization, and are prerequisites if students are to acquire reading, writing, listening, speaking, math, and critical thinking skills.

Study skills are taught in elementary school, but are frequently neglected in secondary school because they do not fit into any one specific, subject-based area. Although high achieving students can often develop effective study skills on their own and do not need much specific training, disadvantaged students typically do not spontaneously develop these skills to an adequate, functional level and must have systematic instruction. Since study skills instruction is most effective when integrated with the rest of the curriculum, study skills can and should be included as an essential component of every vocational course in which disadvantaged students are enrolled.

Key Study Skills

The following study skills are critical for success in the workplace (UC-Davis, 1986). Each student should be provided numerous opportunities to:

- Take notes when someone is speaking, paraphrasing what is being said by the speaker;
- Organize notes in outline or map (visual) form;
- Prepare for a test by reviewing notes;
- Determine whether time is being used productively and develop a plan for improvement;
- Prioritize assignments and develop a timeline for completion;
- Identify a comfortable work/study environment and get into the habit of using it; and
- Improve the ability to concentrate.

Successful Strategies for Teaching Study Skills

Time Management

Have students complete a self-assessment checklist for each study skill (organizing and prioritizing, concentrating, note and test taking, time management). Analyze and discuss the results. Brainstorm ideas for improvement.

Model for students the process you use for budgeting your time. Talk about the commitments that are fixed; i.e., job, school, child care. List the daily living activities that occur; i.e., eating, sleeping, traveling. Explain how you choose to prioritize the time that is left. Have students work in small groups to budget their personal time.

Discuss with students the importance of setting a goal and planning a reward for each study period so that studying doesn't expand to fill the time available with little being accomplished. Have students work in small groups to list reasonable study goals and rewards. Then have each group share their ideas with the class.

Before lecturing, review the information taught during the previous class so that students can link new information with existing prior knowledge. Explain what you are doing and why.

Note Taking

Provide students with controlled notes at the beginning of the term. Controlled notes are the notes you would make after reading a chapter. Include less information on the second set of controlled notes and let students add the missing information. Have students develop the next set of notes independently.

Demonstrate on a transparency how you would take notes after reading a chapter. Discuss the overall organization of your notes and why you did or did not include specific information.

After a lecture, make transparencies of several students' notes and compare them. Discuss why the notes would or would not be helpful after two weeks.

Show students how to improve their notes. Rewrite words that are illegible, write out the whole word for abbreviations, and add brackets, arrows, and other visual signals that aid the organization of the material.

Provide five minutes at the end of each class for students to review and revise their notes and ask clarifying questions. Remind them that 24 hours after learning, most students are unable to recall 20% of the content unless they have reviewed the material.

Test Taking

Point out to students that testing is a process used to evaluate work, and this process will continue when they are employed. Employers give tests to prospective job applicants, and often employees are expected to attend school, workshops, or inservice training to keep their skills up to date.

Have students brainstorm and then learn the rules for test taking:

- Look for words like "always" and "never." They may be a clue that the answer is incorrect.
- Eliminate as many choices as possible on a multiple choice test and then select an answer from the remaining choices.
- Answer easy questions first, then go back and answer the more difficult ones.
- Divide test time according to the number of questions and the worth of each.

Ask students to list and demonstrate the techniques they use to memorize information. Provide opportunities for students to practice taking occupational tests. Keep their test results in a folder so they can see their improvement.

Suggest that students form study groups or identify a learning partner. Have students report on whether or not this is helpful in preparing for a test.

Organizing

Have a class discussion about the problems of organization that students encounter. Brainstorm solutions, such as:

- Keep each subject or project in a separate folder.
- Color code subjects or projects. Use a different color pen, paper, and folder for each subject.
- Work on only one subject or project at a time. Keep everything else off your desk.
- Handle papers only one time. Decide what action to take and take it.
- Learn the rule for filing papers: If in doubt, throw it out.
- Use a datebook and include notes about when things are due.

Resources

Burkle, Candace Regan. (1989). Study skills program: Level I. Reston, VA: National Association of Secondary School Principals. Modules developed to assist middle school students to improve study skills. The program is designed to complement the school curriculum. **VOICE #02280.**

Ellis, David. (1985). Becoming a master student. Rapid, SD: College Survival, Inc., P.O. Box 8306, Rapid, SD 57709.

Fitzpatrick, Elaine. (1982). Study skills program: Level III. Reston, VA: National Association of Secondary School Principals. Module developed to assist 11th to 13th-grade students to improve study skills. Units include note taking for college, learning to survey, asking useful questions, and learning from discussions. **VOICE #02302.**

Keroack, E. C., et al. (1989). Adult learning study skills program. Reston, VA: National Association of Secondary School Principals. Module developed to help students prepare for the GED and to become more independent learners. Units include building confidence, managing time and energy, reading to solve math problems, charts and graphs, writing, listening, and note taking. **VOICE #02485.**

Marshak, David. (1986). Study skills program: Level II. Reston, VA: National Association of Secondary School Principals. Modules developed to assist 8th to 10th-grade students to improve study skills. Lessons include note taking, active listening, problem solving, preparing for and taking tests, and using time wisely. **VOICE #02300.**

Wilson, C., & Krasnow, G. (1983). Science study skills program. Reston, VA: National Association of Secondary School Principals. Module developed to introduce study skills into the science curriculum. Units include listening as a science skill, vocabulary, reading for meaning, working with graphics, metrics, and large numbers, measuring tools, scientific laws, and developing and testing a hypothesis. **VOICE #02431.**

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University of California, Davis. (1986). Model general occupational/employability skills. **VOICE #02129**.

Writing Skills

Good writing is a reflection of good thinking. It requires planning, organization, and revision if the final product is to effectively convey what the writer intends. Writing is a particular problem for disadvantaged students because they typically are weak in planning and evaluating academic activities. According to recent research on writing and literacy (Freedman, 1990), successful writing experiences can provide disadvantaged students with a new enthusiasm for staying in school. As a means to achieve this success, disadvantaged students should be allowed to write about themselves and their experiences, even if those experiences make teachers uncomfortable. Career-vocational education provides a unique opportunity for writing about personal feelings, such as what it's like to work in a long-term care nursing facility, or how it feels to raise an animal that is sold for slaughter. Opportunities to express profoundly personal thoughts also help students to engage in the kind of self-discovery that is needed to make optimum career choices.

The most important lesson to teach students is that writing is a time-consuming process — that flawless, shining prose does not immediately and spontaneously appear on the paper. The writing process is divided into three distinct phases. Initially, the writer needs to plan and organize his/her thoughts. This is called the pre-writing phase. The second phase is when the writer begins to actually write, although not necessarily beginning with the introduction and ending with the conclusion. It is often easier to work on the main body of the text first and then go back to write the introduction and the conclusion. No matter what order the writer chooses, after the first draft has been completed, the final phase is to monitor, review, and revise what has been written so that it adequately communicates its message. To improve students' writing skills it is essential to provide explicit instruction about writing and much opportunity for practice and feedback.

"I know my essay on our dog is word for word like my brother's. It's the same dog."

Key Writing Skills

The following skills have been identified by business and industry representatives in California as critical to success in the workplace (UC-Davis, 1986) and should be built into the career-vocational education content. Each student should be provided numerous opportunities to:

- Use the proper mechanics of standard English (i.e., spelling, grammar, capitalization, and punctuation);
- Identify and utilize correct sentence style and structure;
- Convey written information in a clear, accurate, logical, and complete manner when completing forms and composing directives, memos, notes, and other written communication;
- Compile ideas, notes, and materials, developed by self or others, into a single report; and
- Write legibly.

Successful Strategies for
Helping Students Improve Their Writing Skills

Prewriting Phase

- Help students to focus their thoughts prior to actual writing by leading the class in a brainstorming session on the topic. Use mind mapping (see section on Memory Training).

- Teach students to express ideas logically by having them place items in a group by common attributes (hand tools, power tools), by cause and effect (microorganisms spread disease), by sequence of events (ten steps for making an empty, closed bed), by sides of an issue (spraying of pesticides), and by similarities and differences (spin balancers vs. bubble balancers).

> An Agricultural Education class is investigating the desirability of pesticide use. As a class, they brainstorm properties of pesticides, categorize them by their different chemical classes based on lethal dosages. They then formulate possible arguments for and against the use of these chemicals. The students use these ideas to construct an outline for a paper that presents both sides of the issue and then takes a position on why pesticides are or are not necessary for healthy crops. Students read each others' drafts to get more ideas and make recommendations for revisions.

- Show students actual business memos, work orders, and reports, and talk about the importance of writing on the job. This helps disadvantaged students to relate classroom instruction to the real world.

- Have students choose a partner and talk to the partner about the ideas that will be included in their writing. Then have the partners switch roles.

> Most of the students in Mr. Willet's Automotive Technology class are very reluctant to write. As a writing motivation, Mr. Willet asks the students to interview workers at the local automotive repair facility to find out how technology in the last ten years has changed the nature of the work they do, and what changes they anticipate in the immediate future. To prepare for the interviews, students discuss the kinds of questions they will ask. Questions are written on the board and revised as needed.
>
> After the interviews, students work in pairs to plan how they will write up the interview. Each student has an opportunity to talk into a tape recorder about what will be included. At the next class session, the tapes are reviewed. Then each student begins writing the first draft.

Writing Phase

- Allow students to write in different ways: alone, in pairs, and in small or large groups. This will relieve some of the anxiety disadvantaged students experience at being asked to write.

> Students in a Home Economics class write a short reaction paper after watching each film in a series of films on the basic food groups. Working individually, in pairs, or in small groups, the students combine the short papers into one longer one. In work groups, the final papers are reviewed for clarity, organization, and thoroughness. The students use the work group feedback to make revisions before the assignment is graded.

Mr. Kirby requires his Health Careers class to keep a journal of their community classroom experiences. He introduces the idea by providing each student with a colorful, spiral-bound notebook. (Students select the color they want.) Students are expected to make entries in the journal at least two times per week. Students may include observations about what is happening in the health care facility, or their reactions to and feelings about their community classroom placement. Journals are confidential and read only by Mr. Kirby, who responds to the writing the same day by placing a post-it with his comments over the journal entry.

- Provide frequent opportunities for students to write.
- Vary your writing assignments so that students are writing for different audiences and different purposes. Assign reports, have students keep logs of community classroom experiences, or ask students to write letters inviting various workers to speak to the class.
- Point out the logical progression in written work. For example, if the paragraph begins, "There are several important reasons for bathing the patient," the reader then expects to find out what the reasons are.
- Permit students to feel physically comfortable when writing. Allow them to sit on the floor or sprawl over the desks if they like.
- Show students a first draft and final copy of your own written work so that they can see that writing undergoes revisions before it communicates effectively.

Monitor, Review, and Revision Phase

- Allow students to read their first draft out loud to one another to see if it is clear, interesting, and comprehensible.
- Ask students to imagine a reader is asking questions about the first draft. Suggest that they answer the reader's questions in the next revision.
- Respond to both the content and form of the writing through questions, suggestions, praise, or other comments to the writer.
- Recommend specific word changes as you read students' papers. (The word "funny" is overused. How about humorous, amusing, witty, droll, whimsical, laughable, or absurd?) Have students do the same as they work in pairs.
- Allow class time for the pre-writing and revising phases of the writing process.
- Have students save their written work in a folder so they can monitor the progress they are making. Disadvantaged students, especially, need visible reminders of success.
- Do not grade all writing assignments.
- Comment on what is good in the writing rather than what is wrong. Suggest ways to make the paper better. Disadvantaged students need to be reassured that they can succeed.
- Encourage students to respond to the writing of other students by having them read their writing to each other in pairs, or by exchanging papers and having students write their reactions on the paper.
- Allow students to rewrite their papers before you grade them.
- Encourage students to write using a computer.

Resources

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Central State University, & Foundations for Learning Press, Inc. (1986). Foundations for learning: Learning. 570 Highland Avenue, Boulder, Colorado 80302. A Language Arts series that integrates reading and writing for effective communication.

Educational Evaluation and Research, Inc., & ARC Associates, Inc. (1984). A practical writing curriculum. A curriculum guide designed to develop the expository writing skills of disadvantaged vocational education students. **VOICE #07829.**

Educationally Disadvantaged Committee, Industrial Education Inservice Project. (n.d.). With the California Department of Education, Office of Vocational Education, Field Operations Section *and* Industrial Education Unit, *and* California State University — Los Angeles, Industrial Studies Department. Learning to Do series:

Learning to read and write the automotive way.
Learning to read and write the drafting way.
Learning to read and write the electronics way.
Learning to read and write the metalworking way.
Learning to read and write the woodworking way.
(The above are free from **VOICE**, no VOICE numbers.)

Ellis, David. (1985). Becoming a master student. College Survival, Inc., P.O. Box 8306, Rapid City, S.D. 57709. Includes numerous writing exercises and tips for becoming a better writer.

National Center for Research in Vocational Education. (1985). Assist students in improving their writing skills. Professional Teacher Education Module Series (Category M, Part 3 of 6). Ohio University. Provides practical assistance to vocational teachers on how to improve students' writing skills. **VOICE #02087.**

University of Texas at Austin. (1988). Language arts (Applied Basic Skills Series, 7 parts). Contains 81 student/teacher language arts modules designed to teach reading, writing, and communicating through practical life skills. **VOICE #01473.**

Community/Education Resources

California Writing Project is a series of 18 projects statewide to assist teachers to improve the teaching of writing. Most projects include school district inservice programs, and intensive summer programs for teachers. For more information about the site nearest you, call (916) 322-3285, or consult the California Public School Directory, pp. 40-42.

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EFFECTIVE TEACHING STRATEGIES

Cooperative Learning

According to industry experts, the ability to function as a member of a team will be the most important worker skill in the year 2000. Cooperative learning is a methodology designed to promote teamwork and shared responsibility. Cooperative learning requires two or more individuals to work together to complete a task. Team members discuss problems, make decisions, and quiz and encourage each other. When used correctly, cooperative learning promotes self-esteem and tolerance for diversity. Cooperative learning can help students like school more, have higher self-esteem, and demonstrate more effective social skills. Because disadvantaged students frequently have lower self-esteem, poor social skills, negative interpersonal relationships, and low achievement, cooperative learning has much to offer as an instructional strategy for disadvantaged learners.

The basic theory of cooperative learning is that by rewarding students for doing well as a group, peer norms begin to support, rather than oppose, high achievement. Students who are high achievers help the group to be more capable. In a traditional classroom, students are discouraged from becoming high achievers by other students who fear that they will appear less capable by comparison. Cooperative learning can be particularly effective in a classroom with students of diverse abilities. When assignments are structured properly, each student can make a contribution to the learning task at hand.

It is important that teachers understand that cooperative learning and group projects are not necessarily the same. Cooperative learning experiences depend on students developing:

- positive interdependence;
- individual accountability;
- collaborative skills; and
- group maintenance procedures.

Key Skills Development

Cooperative learning assists in developing the following skills that have been identified by business and industry as critical for success in the workplace:

- Awareness of the impact a person has on others;
- Understanding of one's impact on others;
- Understanding of one's emotional set point;
- Dealing with one's own limits by recognizing the need for and seeking new information to apply to problems;
- Judging and balancing appropriate group behavior;
- Coping with undesirable behavior in others;
- Absorbing stress;
- Dealing with ambiguity;
- Listening for content, long-term contexts, emotional meaning, and to follow directions;
- Inspiring confidence in others;
- Structuring social interaction;
- Sharing responsibility;
- Interacting easily with others;
- Recognizing and coping with various unique personalities;

- Developing a sense of cultures and approaches that other team members represent; and
- Understanding groups, why they exist, and how one can navigate the complex social structure of groups.

Successful Strategies in Cooperative Learning

Cooperative learning situations can be structured in one of three ways:

1) Each individual is responsible for completing a group assignment and sharing his or her findings with the group. Within groups, students quiz one another, discuss the problem and compare answers. Students subsequently take individual tests. A group score can be computed — a strong incentive for students to help one another. The group score can also be computed on degree of improvement of each member using a pre-post test gain.

2) Several groups are given the same assignment. Each individual in the group is given a unique topic on which to become an expert. Individuals with the same topic, but representing different groups, meet to discuss their topics and learn from one another, finally returning to their own group to teach their classmates what they have learned. All students are tested individually. Group scores can be averaged or totalled.

A home economics class is investigating alternative ways of providing child care. The class as a whole develops a questionnaire to measure satisfaction, cost, convenience, etc. Each group selects one method of child care (employer provided, in-the-home, community or private facilities) and interviews parents who use this method. Students take different roles in preparing for the experience (preparing questionnaire, contacting facilities or families, working with facility manager to obtain approval, etc.). Each student is responsible for interviewing one or more parents. Groups discuss findings, prepare reports, and share recommendations with other groups. The experience is structured to provide each student with the opportunity to practice leadership, decision-making, communication, and conflict-management. Class time is allowed for students to practice group maintenance and peer feedback.

3) Each individual completes a different part of a group assignment and then shares his or her findings with the entire group. The group produces a single product that forms the basis for the group's evaluation.

A business education class is studying income tax using a case study approach. A student from each group is assigned to complete the case study by (1) using the paper and pencil forms provided by the IRS, (2) using a computer tax package, or (3) working with a tax preparation service. Students become experts on one methodology. They share their new expertise with group members as they compare the results of each tax preparation method. The experience is structured to provide each student with the opportunity to practice leadership, decision-making, communication, and conflict-management. Class time is allowed for students to practice group maintenance and peer feedback.

The school store operated by the distributive education class is designed to help students learn to function as members of a team. Each student is assigned a specific role in the store — cashier, purchasing agent, manager, clerk, bookkeeper — and each has specific responsibilities. Students learn the functions associated with the role (operating a cash register, coding prices, answering customer questions). In the process they can learn to become proficient leaders, decision-makers, communicators, and conflict-managers if class time is structured to encourage the students to learn and practice group maintenance and peer feedback.

Using Cooperative Learning ...

The cooperative learning structure selected is determined by whether the primary objective of the cooperative learning experience is to help students function as a team, to help students get more than one perspective on a problem, or to provide an alternative methodology for learning content.

... to help students learn to function as a member of a team

- Teach the roles and responsibilities of being a team member.
- Use stop-action checklists that solicit feedback from the students on what they are feeling as they participate in the experience.
- Have students design an action plan for completing the activity that lists the steps, responsibilities, timeline, evidence of progress, and the resources needed.
- Use role playing for conflict resolution; have students exchange roles.
- Teach conflict-resolution strategies such as providing a mailbox for students to use to give written feedback to others on behaviors that are promoting or distracting from the group work. The description of the behavior must state specific, observable actions (not inferences or generalizations about motives, feelings, attitudes, or personality traits) and the statements must be non-evaluative. For more information on conflict resolution, consult Cohen (1986).

... to help students acquire content

- Design the experience so that each student becomes an expert on an aspect of the problem. Use pre/post tests of knowledge gain.
- Design the experience so that student tasks can stand on their own rather than building on each other.
- Divide the group task into parts. Make a jigsaw puzzle representing the parts and have the student select the piece of the puzzle that he or she will be responsible for completing. For more information on the jigsaw method, consult Cohen (1986).

... to help students gain more than one perspective on a problem

- Assign a topic for which there is no right or wrong answer.
- Have students develop a list of questions to use in interviewing people. Students can report their findings and present an oral or written report summarizing the topic.

- Make sure that groups contain a mixture of males and females, ethnic groups, high and low achievers, verbal and nonverbal students, and leaders and followers.

Teacher Strategies

It is important to remember that students must be taught how to function as cooperative learners. Cooperative learning is not automatic with either teachers or learners.

- Pre-plan your experiences by identifying your expectations for the group, assigning students to groups, assigning roles, providing written instructions, and setting criteria for evaluation. Let students know if they will be graded individually or as a group.

- Watch the groups carefully. Much of the teacher's time in cooperative learning situations is spent observing how the group functions and using a variety of interventions when the group is observed to be in trouble.

Resources

Association for Supervision and Curriculum Development. Cooperative Learning Series. Five videotapes that explain what cooperative learning is, why it's such an important new tool for educators, and how you can begin implementing it. Available from ASCD, (703) 549-9110. Cost $1180.00.

Cohen, E. G. (1986). Designing groupwork: Strategies for the heterogeneous classroom. New York: Teachers College Press. Discusses advantages and dilemmas of group work, its use in multi-ability and bilingual classrooms, and step-by-step approaches to successful planning, implementation, and evaluation of group work activities. Available from Teachers College Press, 1234 Amsterdam Avenue, New York, NY 10027. Cost $14.95.

Dishon, D., & O'Leary, P. W. (1984). A guidebook for cooperative learning: A technique for creating more effective schools. Holmes Beach, FL: Learning Publications, Inc. Cooperative Learning is presented as a teaching strategy to increase achievement, higher level reasoning processes, and cognitive and social development. Available from Learning Publications, PO Box 1326, Holmes Beach, FL, 33509. Cost $19.95.

Feichtner, S. H. (1990). Teacher's Resource and Guide for Janus Employability Skills Program. Hayward, CA: Janus Book Publishers, Inc. Contains guidelines for cooperative group experiences which foster independent and acceptable behavior skills in the workplace. Available from Janus Books, 2501 Industrial Parkway West, Hayward, CA 94545. Cost $39.95.

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International Association for the Study of Cooperation in Education. Cooperative Learning: The Magazine for Cooperation in Education. Published quarterly. Available from IASCE, Box 1582, Santa Cruz, CA 95061-1582. Cost $20 for individual membership; $30 for institutional membership.

Johnson, D. W. Collection of cooperative learning documents. Includes articles on Building Positive Attitudes by Using Cooperative Learning Groups; Positive Peer Relationships; Cooperative Learning: The Power of Positive Goal Interdependence. **VOICE #06919.**

Johnson, D. W., et al. Circles of learning: Cooperation in the classroom. Book discusses why cooperative learning is important, the relevance of research on cooperative learning, implementation, supervision of teachers, and myths about cooperative learning. **VOICE #08227.**

Kagan, S. (1989). Cooperative learning: Resources for teachers. Riverside: University of California.

Strother, D. B. (1990, October). Cooperative learning: Fad or foundation for learning. Phi Delta Kappan, 72 (2), 158.

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Curriculum-Based Assessment

The fundamental purpose of assessment is to obtain data which will enable educators to make "improved" educational decisions related to placement and instructional planning. The literature concerning assessment for special needs students during the past decade has focused primarily on two types of assessment — formal and informal. Curriculum-based assessment (CBA) emphasizes the use of informal assessment procedures which are classroom-based (Stodden et al., 1987).

Blankenship and Lilly (1981, p. 81) define curriculum-based assessment as the "practice of obtaining direct and frequent measures of a student's performance on a series of sequentially arranged objectives derived from the curriculum used in the classroom." Fuchs and Fuchs (1985, p. 4) cite the following advantages of using the CBA approach:

1. It is sensitive to short-term student growth.
2. It provides frequent, brief samples of curriculum-based performance that improves the database on the student; data that is normally unavailable through the use of conventional achievement tests.
3. It enables school personnel to generate their own perspective and make their own judgments about the student's ability as compared to that of local peers.
4. CBA is cost effective since the need for purchasing commercial tests is eliminated.

How Can Vocational Education Use CBA?

Curriculum-based assessment (CBA) identifies students' academic strengths and weaknesses for instructional program decision-making purposes. Curriculum-based vocational assessment (CBVA) involves the identification of students' occupational strengths and weaknesses for purposes of making decisions affecting career-vocational programming and instruction. CBVA is described by Stodden, et al. (1987, p. 7) as a "process for determining the career development and vocational instructional needs of students based upon their ongoing performance within existing course content and curriculum."

"Not a bad kitchen table. Still having a little trouble with the metric system?"

Assessment of a student's interest and achievement in an occupation occurs at three different stages in the student's career-vocational program: (1) when the program placement decision is made; (2) during the training period; and (3) when the student exits the program (Albright and Cobb, 1989, p. 5). At each stage, different assessment questions are asked.

The following table details specific questions that might be asked at each stage of the student's vocational program.

What is involved in the CBVA Data Collection Process?

Two major tasks involved in the data collection process of curriculum-based vocational assessment information include: (1) observing students during performance; and (2) recording the assessment information. The collection of this data must be completed in a systematic fashion that is closely monitored in order that consistent measures of student performance are obtained. Without this consistent measure, meaning may not be readily applied to the analysis of data obtained.

Table 1
CBVA Stages and Sample Assessment Questions

Stage	Assessment Questions
Program Placement and Planning	• What vocational program is most appropriate for the student? • What are the special serviceneeds of the student in this particular program? • What will be the criteria used to determine student success?
Participation in Occupational Training	• How is the student performing in the career-vocational setting? • What changes are needed in the student's program?
Program Exiting	• What are the special services needed to help the student transition into employment and/or post-secondary education? • Which adult service agencies need to be linked to the student? • How will student adjustment be monitored?

(Source: Stodden et al., 1987)

Data collection in a curriculum-based vocational assessment process involves:

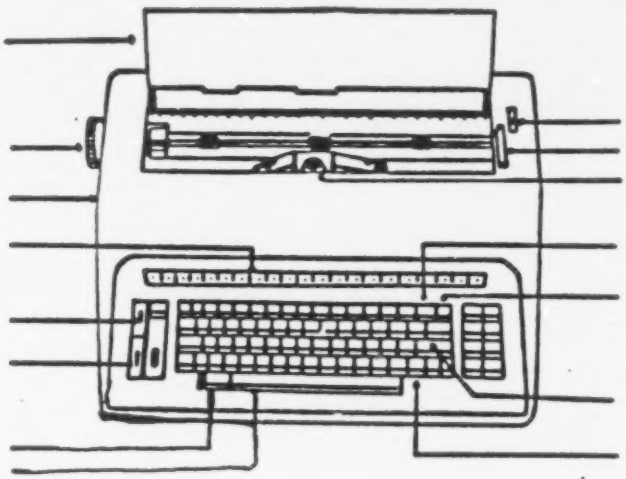
1. observing student performance;
2. recording information (a) at various intervals as students participate in different tasks and activities, (b) on a variety of tasks in the classroom or work site, (c) that can be easily translated into a final standard of performance and a grade or rating; and
3. applying the information to the curriculum being taught.

Career-vocational educators using CBVA need to consider the following questions as they implement curriculum-based assessment in the classroom:

1. What behavior/skill will be observed?
2. Where will the observations take place?
3. When will the observations take place?
4. What sources of information will be used?
5. What record-keeping will be employed?

Educators in ROC/Ps are in an excellent position to utilize CBVA because they offer the opportunity to assess vocational skills that have been well-defined (Stodden et al., 1987).

Mr. Sparks, the Business Education teacher at Valley ROP, has used CBVA for a number of years as a tool to measure the progress of his students. This year Mr. Sparks has LEP students in his basic typing class so his CBVA design included performance and oral identification tests and the elimination or reduction of time constraints for test completion when possible. The first student task in Mr. Sparks' beginning course is to learn the parts of the typewriter. Mr. Sparks gives each student a picture of the typewriter with the names of the parts written in the student's native language and in English.



He also shares the drawing with the ESL teacher so that the students can practice the English words. Mr. Sparks measures the progress of the students during class by asking them individually to point to the part of the machine as he says the words in English and to repeat the English word to him. He uses the following simple checklist of performance over time to record what he observes. Each time the task is completed correctly, Mr. Sparks enters a '+' in the appropriate column; each time the task is completed incorrectly, Mr. Sparks enters a '0.'

Number of Trials

Subtask	1	2	3	4	5
1. Points to keyboard when English word is spoken.					
2. Says keyboard in English when keyboard is pointed to.					
3. Points to space bar when English word is spoken.					
4. Says space bar in English when space bar is pointed to.					

Mr. Sparks uses the information he collects to modify his instruction by providing peer tutors to help with pronunciation or by putting labels with the English words on the typewriter to help with part recognition.

Resources

CBVA Newsletter (4 times a year). Editors: Robert A. Stodden and Sarah W. Bisconer. Publishers: University of Hawaii at Manoa, University Affiliated Program, Wist Hall 211, 1776 University Avenue, Honolulu, HI 96822.

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Sarkees, M. D., & Scott, J. L. (1985). Vocational special needs. Alsip, IL: American Technical Publishers, Inc.

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Stodden, R.A., Ianacone, R. N., Boone, R.M., & Bisconer, S.W. (1987). Curriculum-based vocational assessment: A guide for addressing youth with special needs. Honolulu, HI: Centre Publications, International Education Corporation.

Individualized Instruction

Individualized instruction is a method of organizing the delivery of content to take advantage of the student's different strengths and weaknesses, including the student's preferred learning style(s). According to Cross (1979, p. 41), individualized instruction is characterized by the following components:

1. **Active Learning.** The learner is actively involved in the learning process. He or she may be solving problems, cycling through learning packages, or conducting experiments.

2. **Objectives.** The learner is aware of the instructional objectives of the unit. In essence, the learner knows where he or she is going.

3. **Small Units.** The learning task is divided into a quantity of short, instructional activities. Often a one-semester curriculum will be broken down into 20 to 25 units. This allows for mastery of a reasonable number of units of material and can prevent student discouragement. (Learning activity packages can be prepared for each unit. These packages typically contain objectives, learning activities, and evaluation systems.)

4. **Evaluation.** The learner is provided with a range of assessment activities. Pre/post tests, checklists, experiments, hands-on, behavioral observations, and self-reports are just a few of the many methods of evaluation.

5. **Self Pacing.** The learner has the opportunity to self pace throughout the learning sessions.

Many misconceptions exist about the true meaning and definition of individualized instruction. Scott (1980, p. 106) believes that individualized instruction should be more than programmed instruction, independent study, or a tutorial approach. Those components can be and often are part of an individualized instruction program, but when used alone, they are too narrow in scope to represent anything other than a short-term learning experience.

What are the Techniques Incorporated into Individualized Instruction?

Individualized instruction incorporates many strategies and techniques because the basic assumption or premise of individualized instruction is that no one strategy is right for every learner. A synthesis of the literature on individualized instruction lists the following techniques:

1. Student participation in goal setting, selection of learning activities, and evaluation of progress;

2. Allowing the student to work alone and sometimes as a member of small groups;

3. Varying the sequencing and pacing of instruction (e.g., not requiring all students to complete the same hierarchy of ordered instruction at the same pace);

4. Varying the levels of difficulty of instruction to ensure continued motivation and chance for success in individual students;

5. Providing a variety of learning experiences using a variety of instructional media and materials (e.g., concrete, practical, hands-on experiences, demonstrations, lectures, discussions, teacher-student conferences, programmed instruction, experiments, and written instruction);

6. Creating various physical learning environments that enhance individual learning (e.g., learning/work centers, group tasks, and student-teacher conferences);

7. Varying the amount of time that is allowed for learning to occur and performance mastery to be demonstrated (e.g., open entry/open exit points for individual students to complete a vocational instructional program's required tasks);

8. Diversifying assessment techniques (e.g., manual, written, and oral performance tests).

It is important to note that no one strategy alone constitutes individualized instruction, but rather the emphasis is on a collection of techniques that, when combined, are considered to be an individualized instructional program designed to meet the needs of the student.

What Teaching Methodologies are Used in Individualized Instruction?

Greene et al. (1988, pp. 43-51) identified a list of common methods familiar to most educators which can be used to individualize the delivery of instruction. Examples of those methods are as follows:

1. Programmed instruction: materials presented in small steps, with student making continuous responses to programmed materials for feedback which either corrects or confirms their responses. The materials allow students to move at their own speed.

2. Mastery learning: the teaching-learning process includes testing, feedback, and correction. Mastery learning includes:

   - pre-testing
   - instruction
   - practice
   - post-testing
   - reteaching (if necessary)
   - retesting (when needed)
   - generalization.

3. Computer assisted instruction (CAI): self-paced instruction utilizing the computer as a tutor to provide feedback confirming or correcting the student's response.

4. Learning contracts: an agreement between a teacher and a student regarding information about a specific topic. Learning contracts are jointly planned and signed.

5. Competency-based instruction: a method of organizing instruction to achieve predetermined minimum competencies in students. This strategy starts with specifications of certain achievable and required performance standards and then measures to see if they have been mastered or acquired.

Sarkees and Scott (1985, p. 307) identified a number of special considerations for implementing individualized instruction to be considered by vocational educators:

1. It may take students with special needs longer to complete required tasks or assignments that are assigned on an individualized basis. They should be given the same credit as other students who complete the work in less time, as long as the quality of the completed work meets the standards of the teacher.

2. Specific objectives should be developed and carefully explained to learners with special needs before they begin an individualized instructional activity or assignment. These objectives should be stated in behavioral or performance terms so that students clearly understand exactly what to do.

3. Career-vocational teachers should determine what previous knowledge and/or skills are necessary for completion of the individualized assignment and make certain that students possess the prerequisite information, terminology, and skills.

4. Routine and periodic supervision should be provided by career-vocational instructors while students are working on individualized instruction activities.

5. Criteria for evaluation should be clearly defined and understood before the activity or assignment is started.

6. The learning environment where individualized instruction is to take place should be flexible and allow for a variety of activities and experiences according to the specific needs of the students.

Individualized instruction requires careful planning, monitoring, and evaluating. It is a very specific and technical skill for professional educators to develop. It is not easy by any means, but the benefits are well worth the effort.

Ms. Rothwell has a number of students in her small Engine Repair class who are academically disadvantaged. She was having difficulty trying to meet their individual needs, and found it most helpful to develop a Unit Activity Card File. This card file was developed based on the objectives from each of the units to be taught. Introductory units such as safety in the shop required objectives like describing safety hazards in the shop, use of tools, etc. Activity cards for this unit included tasks as in the example below:

> You have 10 minutes to go on a scavenger hunt in our shop. Find 15 potential safety hazards and tag them with the attached red flags. Once you have completed this, check with the teacher's red activity book to see if you found the 15 potential hazards correctly.

Ms. Rothwell found that students enjoyed the activities, moved throughout the room, became acquainted with real safety hazards, and could remember where those hazards were when test time rolled around.

For students who have difficulty sitting still for periods of time, or those who need to touch and walk through situations to absorb the meaning, Ms. Rothwell found tasks such as this beneficial. This activity required very little reading or writing, but did provide the information needed for the objective. It was also self-checking and allowed students to work individually.

Ms. Rothwell also utilized a computer for individualized instruction. Students learning to read a micrometer were given some basic hands-on practice and then were presented with a self-checking computer program and allotted ten minutes per day to work on comprehension.

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Memory Training

> "Memory and its handmaiden, learning, have always been central to education, but we have never really understood their underlying mechanisms ... that situation is changing dramatically. New research technologies have vastly increased our understanding of brain function, and scientists are moving closer to an understanding of memory, perhaps the most complex cognitive system."
>
> — Robert Sywlester

Memory makes us human. Without it, we could not communicate. Human emotions and speech are vital elements of our memory processes, which may explain why childhood memory and speech begin about the same time.

Science has a long way to go to fully understand how memory works within the human brain. As new information is gathered, previously held models are expanded upon or discarded altogether. For example, the concept of a "hidden vault" — a treasure chest of everything we have read, heard, experienced, stored intact — is giving way to a model of memories stored and recalled through electronic impulses. Many scientists believe the secret of memory is contained in tens of billions of neurons in the brain, communicating with each other through electrochemical impulses.

Computer science provides a general model of the human mind as information processor. The mind is seen as doing many things that a computer does. The mind accepts or encodes, manipulates, transforms, stores, and retrieves information.

Memory — How it Works

We typically think of memory as a single process. There are actually three separate, but interrelated systems of memory. They are sensory, short-term, and long-term memory.

"Why do we have to memorize Lincoln's Gettysburg address? Isn't it in the Gettysburg phone book?"

Sensory Memory. Sensory memory has two important characteristics: (1) it can store an enormous amount of information; and (2) it can store this information for only a very brief period of time. Getting information into sensory memory is a straightforward process. Anything we see, hear, smell, or taste enters or is encoded in the memory system. The information is recorded in amazing detail, much like a photograph taken by a camera. The sensory memory allows us to continue to see an image of something after it has left our visual field. The sensory memory holds information for only .075 of a second and the information is then forgotten or transferred to the short-term memory.

Short-Term Memory. The short-term memory is often called the "working memory." This is where information is consciously considered and manipulated. The short-term memory has two important characteristics: a short duration and a limited capacity.

Information will usually stay in short-term memory for no longer than 15 to 20 seconds — unless consciously held for transfer to long-term memory. Some of the techniques used for retaining information in the short-term memory are "memory-span tasks" and "chunking" information. Regardless of the nature of the items (digits, letters, words, or phrases), memory span remains surprisingly

constant, limiting information to seven, plus or minus two, items. By "chunking" information, the capacity of the short-term memory may be enlarged. For example, our social security numbers would be more difficult to remember if they were a string of nine numbers (536124839). By adding two hyphens, we group them into three manageable chunks (536-12-4839).

While it is true that information entering the short-term memory is retained for 15 to 20 seconds, information can be held for a longer period of time if it is given continued conscious attention. This process is called rehearsal. Rehearsal has two functions: (1) it can be used to maintain information in the short-term memory, and (2) it is the mechanism by which information is transferred to the long-term memory.

Long-Term Memory. The long-term memory is quite different from the other two parts of our memory system. The two characteristics of the long-term memory are: (1) its capacity is almost unlimited, and (2) once embedded in the long-term memory, information stays forever. The short and long-term memories operate in very different ways. The short-term memory is the working memory, while long-term memory is more of a storage area.

Long-term memories reach back to early childhood, but rarely beyond the ages of three or four. Few of us can remember anything that happened to us before that. Many scientists believe that language is the key to long-term memory and it is not accidental that we start having long-term memories when we starting developing speech.

Many studies have highlighted the fact that we can facilitate retrieval by the way we store information in the long-term memory. By carefully organizing material when it is stored, the information becomes easier to retrieve. The more connections we have, the more ways we have to retrieve or recall information.

Retrieval is also enhanced if the original information has meaning. We store information based on how we perceive its usefulness. If students see the information they are studying as needed only to make a good grade on a test, its retrieval will be less likely than if the information is seen to be useful in their lives in some way.

Memory Strategies

Some of the strategies for organizing information with the sole purpose of making the information more memorable include the use of mnemonics, visualization, and mapping.

Mnemonics

Mnemonics are usually short, verbal devices that encode facts in ways that make those facts easy to recall. There are four general categories: creative sentences, rhymes and songs, new words, and special systems such as chunking.

"The formula for water is H-I-J-K-L-M-N-O . . . H to O."

Creative Sentences. Creative sentences, or acrostics, are sentences in which the first letter of each word represents a response. For example, in teaching students the parts of a business letter (date, address, salutation, message, closing, and signature) the acrostic Dogs Around School May Chase Students can help students recall the main parts of a business letter.

Rhymes and Songs. Jingle mnemonics use rhythm and rhyme to move memory along, as in the essential spelling rule:

I before E
Except after C
Or in rhyming with A
As in neighbor and weigh.

New Words. New words, or acronym mnemonics, are words created by the first letters of a series of words. Examples include:

FBLA (Future Business Leaders of America)
FFA (Future Farmers of America)
FHA (Future Homemakers of America)
DECA (Distributive Education Clubs of America)
VICA (Vocational Industrial Clubs of America)

Systems. In using the above acronyms, it would be difficult to recall the acronyms if they were written as follows:

F B L A F F A F H A D E C A V I C A

Now read the list

FBLA FFA FHA DECA VICA

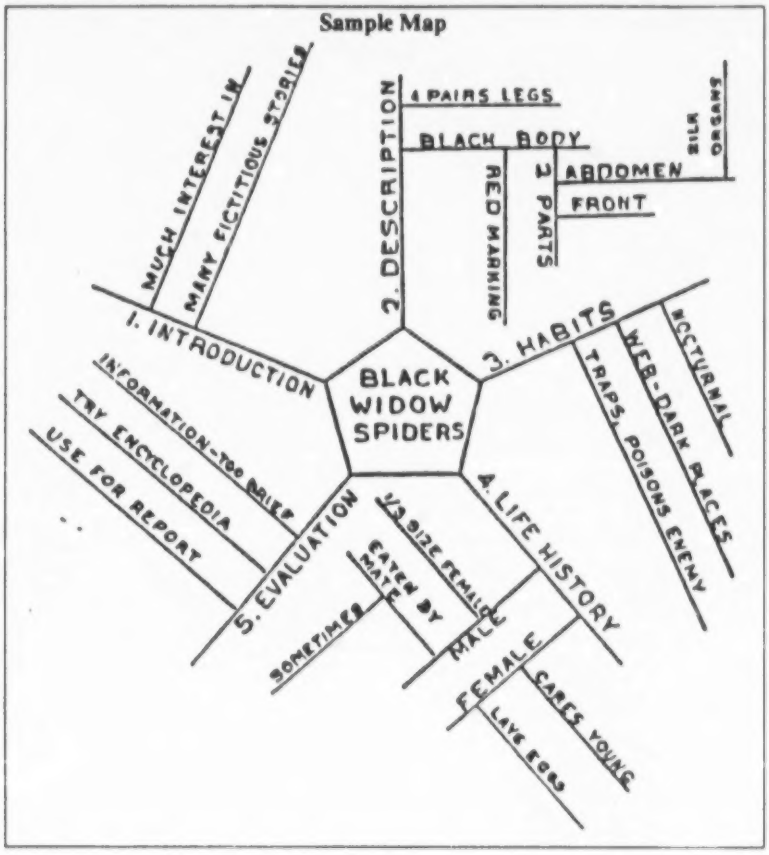
Even though line 2 contains the same number of letters as line 1, it contains fewer chunks of information. Since the letters appear to be unrelated in line 1, each individual letter is stored in the short-term memory as one piece of information. This makes 18 pieces of information which exceeds the capacity of the short-term memory. Line 2 also contains 18 letters, but the letters are combined into five chunks of information.

Visualization

In the process of visualization, students are asked to imagine an object and then to describe in detail what they see (the surroundings, themselves in relation to the object, other people in relation to the object), what they hear (what they are saying, what others are saying, background sounds), what they feel, what they taste, and what they smell. The process of visualizing an object provides a cognitive pathway that helps students access potentially relevant knowledge. Visualization can be preceded by deep-breathing exercises that will help students relax and begin to concentrate.

Mapping

Mapping is a way to make associations between random facts on a subject. It provides the brain with a hook on which to fasten material. Start with the main subject. Write down the topic in the center of a page. Then, on lines branching out from the starting point, write everything you can think of concerning that subject. Use key words. Write each word on a line and write related words on lines branching out from the original. Continue this process until you can't think of anything else to write.



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Techno-Tools

Carl adjusted the headset, started the interactive video program, and watched as the story of King Alpha and Queen Bet unfolded before him. The story, presented in a comic-book format accompanied by sound, traced the development of language in an intriguing storyline. Considered "slow" from his early years, Carl did not develop strong language skills, and at age 15 his reading level was only at third grade. He was enrolled in a vocational business program, and was identified as disadvantaged because he was not able to read the class text. Now, however, things are changing for Carl. The PALS (Principals of the Alphabet Learning System) program that he is viewing is designed to increase student reading levels. Carl has only been using the program for six weeks, but has already increased his reading level by one full grade!

Beth is using a Macintosh computer, connected to a videodisc player and television. She is working on developing her communication skills. The program takes her through many short vignettes dealing with communication problems encountered each day on the job. She views situations involving both co-workers and customers. Through examples and careful questioning from the program, Beth is getting a clearer picture of what good communication really means!

"You are supposed to read it, Ernie; a book does not run on batteries."

Rogello uses his videodisc experience to teach him more about the operations of the internal combustion engine. The visuals, taken using fiber optics *inside* of a working engine, show him in detail how the engine works. Rogello is beginning to understand just what happens when an engine is running, and is now able to apply skills in analysis and diagnosis to the problems his auto shop instructor gives him.

Isaiah is using a PC (Personal Computer) connected to a CD-ROM (Compact Disc-Read Only Memory) disc. The disc contains Grolier's encyclopedia, with every work indexed. Using the disc as a research tool, Isaiah is exploring what it means to be a medical technician. He is developing a clearer picture of what it will take for him to reach his goal.

The examples above are composites from schools around the state of California, but they provide an accurate depiction of what is going on in today's classroom. Technology is beginning to have an impact!

However, the question many teachers have is "What kind of impact?" All of us have heard over the years of some latest "wonder" of technology that will take teaching into levels never before obtainable. Repeatedly, the outcome has been the same. The "wonder" comes, gets minimally utilized, and then fades into oblivion (oblivion being the back corner of the supply closet where the apparatus turns up 12 years later during a room cleaning).

What gives today's tools more potential than those of prior years? Why should we expect the new technology to deliver any more promise than that which preceded it? The answer lies in the nature of the technology itself, as well as in the approach to integrating it into the classroom situation. Earlier technologies were big on promises to "involve" students in the learning process. They would make students *active* learners. Unfortunately, the technological sophistication needed for that kind of interaction was simply not available. Today we have a different situation.

The advent of ever more powerful microcomputers has produced a quantum leap in capabilities. The power of an IBM mainframe of 15 years ago is easily available on a desktop today. With this increase in processing power, ever more sophisticated methods of human/machine interaction have been developed to allow responses to flow as naturally as possible.

Accompanying this leap in power has come a leap in design considerations. No longer are companies throwing out the latest technological whiz-bang and saying, "Isn't it neat? Now go out and do something with it!" The Xerox Star System is a good illustration. Available in 1978, it utilized a mouse, icons, and pull-down menus. It had incredible potential, but no one quite knew what to do with it, including, unfortunately, Xerox. The machine died, but the concepts it embodied are alive today in Apple's Macintosh computer, and (to a slightly lesser extent) in Microsoft Windows 3.0 for IBMs and IBM-compatibles. These later generation products have been developed and refined through countless hours of research and testing.

"I like educational toys. I like educational TV. I like educational reading material. It's education I don't like."

IBM's InfoWindow interactive video system was under development for several years. The technology itself preceded the product rollout by years because it was recognized that this great hardware would need equally great software to make sure people could actually use the system once it was manufactured.

These are not the only examples. Pioneers in the interactive video industry are dedicated to producing the most natural and positive learning environment possible. These pioneers recognize an important factor: that all this wonderful technology is only a *tool*. It is not the be-all and end-all of the process, but rather a means to facilitate the ultimate outcome — student learning.

Of all the audiences for which the new technology holds greatest potential, the disadvantaged student rates near the top. The very nature of the interactivity, and of the superior sound and graphics gives an excitement and change of pace to the student's learning environment. Where the student has failed in traditional settings, he/she can quite often succeed wonderfully when confronted with this new approach that provides a non-threatening view of the subject matter.

"If school were as important as they say it is, we wouldn't have to go. It would be televised."

How effective can this education be? A major project underway in Texas offers an answer to this question. The Texas Learning Technology Group (TLTG), in partnership with IBM, has developed a 160-hour Physical Science Curriculum, delivered through multimedia technology (IBM's InfoWindow). In a controlled experiment utilizing the curriculum, "... classes using the TLTG Physical Science Curriculum significantly outperformed those receiving traditional classroom training. The improved performance was reflected over the full range of student aptitude. One ... school, with failure rates in excess of 50% had

65 of 67 students pass physical science with the new curriculum" (IBM, 1990). When tested in an inner-city environment, a school "with physical science failures of between 60 and 70 percent, saw the failure rate drop to 22 percent ... of that 22 percent, most were truants" (IBM, 1990).

Technology is *not* a panacea! It *is* a most powerful tool that has demonstrated its usefulness in our classrooms. Like any great tool, it is useless unless placed in the hands of a skilled practitioner.

Resources

Apple Multi-Media Products. A help line that can locate multimedia products that will run on Apple-based products. Contact *Apple Assistance*, (408) 252-2775.

Ciancio, J. (1988, March). Literacy: The basic skill. Vocational Education Journal, 63 (2), 41.

IBM Multimedia Catalog. A listing of products available for use on the IBM InfoWindow system. Contact your local IBM representative.

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Menu Software Directory. Listing of courseware from various vendors. Contact: (800) 843-6368.

National Demonstration Laboratories. A part of the Smithsonian Institution, it was organized to demonstrate the latest applications in educational technology. Contact: National Demonstration Laboratories, Arts & Industries Building, Room 1130, Smithsonian Institution, Washington DC 20560.

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Vocational Student Organizations

There are ten national vocational student organizations (VSOs) recognized by the U.S. Department of Education which provide activities integral to specific vocational education subject matter. VSOs offer programs on career awareness, leadership development, motivation, and recognition activities to students in middle/junior high, secondary, or postsecondary schools, adults, and collegiate students enrolled in vocational and pre-vocational programs.

VSOs are not social clubs, but instructional and motivational tools used in the classroom by the well-prepared advisor. They address the student's social, physical, and mental well-being with the focus directly relating back to classroom instruction. VSO activities expand and enhance the subject matter by:

- showing instructional relevance;
- providing an opportunity for students to gain personal and leadership skills;
- having goals and philosophy compatible with vocational education; and
- providing learning experiences through industry led opportunities to expand realistic career goals.

VSO activities should be integral to instruction and be a part of the curriculum.

Recognized U.S. Department of Education VSOs are:
(† programs offered in California)

Business Professionals of America (BPA)
This organization serves the needs of high school and postsecondary students enrolled in vocational business and office occupations.

Distributive Education Clubs of America (DECA)†
Marketing education is the focus of this VSO and it serves high school and postsecondary vocational education marketing students.

Future Business Leaders of America-Phi Beta Lambda (FBLA-PBL)†
Business education students are served on both the secondary (FBLA) and postsecondary (PBL) levels.

Future Farmers of America (FFA)†
FFA serves secondary students in agriculture and agribusiness programs.

Future Homemakers of America (FHA) — Home Economics Related Occupations (HERO)†
FHA is the student organization for persons in secondary consumer home economics programs, while HERO is for secondary and postsecondary students in occupational home economics programs.

Health Occupations Students of America (HOSA)†
HOSA is the VSO exclusively for health occupations education students and consists of membership of secondary and postsecondary students.

National Postsecondary Agriculture Student Organization (PAS)
Agriculture, agribusiness, horticulture, and natural resources offerings in

postsecondary institutions make up the membership of this organization.

National Young Farmer Education Association (NYFEA)
The NYFEA organization is for adults enrolled in agriculture education.

Technology Students Association (TSA)
Technology education/industrial arts, high school, intermediate, and elementary students make up this membership.

Vocational Industrial Clubs of America (VICA)[1]
This is the organization for secondary and postsecondary students enrolled in trade, technical, and health occupations. (In Cali*fornia, students in health occupations are in HOSA).*

In California, these organizations and membership in these organizations are, for the most part, voluntary. Subject matter vocational teachers, who wish to give their students some unique and challenging experiences, are essential to a well-run VSO. Teachers use the VSO experience to prepare well-rounded, successful, career-minded individuals.

The value of these organizations has been expressed by former members. Some say that it was the VSO that got them interested in vocational education. Others state that they learned how to be leaders through chapter activities and elected offices; that they "found themselves" through participation and gained self-confidence and a positive attitude; that they learned to be a team member through chapter participation; that the VSO motivated them to study harder and encouraged them to stay in school; and that they received their first recognition award through a VSO.

Trong knew that he needed to improve his communication skills if he was going to find employment as a salesman. He asked his marketing teacher, Ms. Riviera, what he should do about his fear of speaking to English-speaking strangers. Ms. Riviera encouraged Trong to join DECA and participate in the club activities. She reminded Trong that students taking marketing had the option on Friday morning of participating in DECA activities, working in the school store, or going to the learning resource center. The students in DECA were currently preparing and presenting speeches in preparation for the local and regional leadership competition. Because Ms. Riviera knew that Trong was sensitive about his English-speaking ability, she encouraged him to work with his ESL teacher on his presentation. When Trong was ready to practice his presentation, Ms. Riviera arranged for Trong to videotape his talk to give him confidence in his ability to communicate. Ms. Riviera and the ESL teacher worked with Trong to help him with his pronunciation and phrasing. The first time Trong presented his talk to his classmates, he used an overhead projector and an outline of his presentation to give him confidence. His classroom presentation was good enough to win him a trip to the regional competition. Although Trong did not win in the competition, he gained the self-esteem and self-confidence he needed to seek and find summer employment as a clerk in a local store.

Employers support VSOs by donating millions of dollars in scholarships, supplies, facilities, equipment, and in-kind employee hours. In a recent study on determining the predictors of successful employees, AT&T found that involvement in student organizations came in a close second to a related college major as a predictor. The study established that, when competing for a job, involvement in clubs, organizations, or student government can give a student an "edge" over someone with the same qualifications who did not participate in such activities.

VSOs serve two major purposes: they help students to learn and to develop personal qualities important to success on the job. VSOs were instituted as a means to improve self-concept, develop respect for work and pride in a chosen occupation, develop high ethical and moral values, create an understanding and appreciation of the work ethic, and

develop a sense of cooperation with others to accomplish chapter/club activities and school and work assignments. Sarkees (1985) identified some advantages of participating in VSO activities that are particularly relevant for teachers of disadvantaged students:

- building self confidence;
- developing interpersonal relationship skills;
- improving vocationally related and employability skills;
- providing motivation to learn;
- providing valuable information about citizenship and living independently in our democratic society;
- developing leadership skills; and
- providing an opportunity for effective student-teacher interactions.

In order for the subject matter teacher/advisor to be able to successfully provide the students with vocational and leadership skills, the VSO must be carefully integrated into the existing curriculum. VSOs all begin with the desire of the teacher to work with a chapter. If the teacher is starting a chapter, the teacher needs to:

- obtain the approval of the administration to start a chapter;
- recruit students to join;
- elect officers;
- establish by-laws;
- develop a proposed budget and arrange for financial transactions; and
- develop a calendar of work/activities for the coming year.

Students need to be introduced to the VSO and understand the overall goals and benefits of the organization. Capturing the students' interest can be accomplished by:

- bringing in former members who have become successful;
- showing films or slides about the VSO and activities;
- developing a scrapbook display of chapter activities;
- showing examples of trophies/plaques or other awards; and
- participating in local, regional, state, and national competitions or events, such as health fairs, auto check stations, and graphic or clerical services.

Leadership skill development can be enhanced by having students:

- invite and introduce guest speakers to the class;
- run for class office;
- report on a class project;
- plan and participate in a banquet, open house, or awards ceremony; and
- run a meeting using parliamentary procedure.

Social development is taught through basic social grace skills and practice, team projects, good citizenship, money management, and increased self-awareness activities.

VSOs make vocational programs visible. Because of the local, regional, state, and national activities, school officials and the community are informed of the successes of the students. Community residents like to hear that the tax monies are spent on worthwhile educational activities, and when they can see evidence of students receiving quality education, the entire system benefits.

It is the responsibility of the vocational education teacher/advisor to offer the VSO to all students, including special needs. A VSO can be a valuable part of the special needs

student's life — they have the most to gain. The VSO provides the special needs student with the opportunity to get to know him/herself better and set reasonable goals, with recognition and success, and with an atmosphere in which he or she can socialize with a teacher and classmates on an informal basis. In many situations, a VSO is the only way for a student to develop leadership skills.

It may be necessary for the teacher/advisor to modify some of the activities to accommodate the special needs student by:

- using small group work;
- allowing the student to work at his or her own pace;
- providing peer assistance (helping others is a learning experience as well);
- planning activities where time is not a component of success;
- arranging activities that have reduced financial needs;
- dividing difficult activities into smaller tasks;
- involving the parents; and
- encouraging community involvement.

Each VSO has resources available to the teacher. Official catalogues usually have lists of booklets, pamphlets, slide sets, videos, and a list of other advisors willing to assist in starting a chapter. The state advisor who plans and coordinates the VSO on the state level can also provide assistance upon request.

Sarkees (1985) suggests the following activities for vocational teachers who want to start a VSO chapter or want to learn more about VSOs:

- Write to the national headquarters of VSOs and obtain copies of appropriate materials to increase your knowledge of VSOs and to help you support their operation.
- Attend VSO leadership workshops and conferences that may be offered locally, regionally, or at the state or national levels.
- Visit a VSO and observe how VSO activities are incorporated as an integral part of the curriculum.
- Attend the VSO competitive events held at your school or on the district, region, or state level.
- Obtain VSO materials on leadership skills, communication skills, and parliamentary procedures and incorporate them into your units of instruction.
- Volunteer your services to the state VSO advisor in your occupational interest area.
- Become a professional or honorary member of the VSO of your choice.

Resources

Business Professionals of America (BPA)
5454 Cleveland Ave.
Columbus, OH 43231

Distributive Education Clubs of America (DECA)
1908 Association Drive
Reston, VA 22091

Future Business Leaders of America (FBLA)
Phi Beta Lambda (PBL)
1908 Association Drive
Reston, VA 22091

Future Farmers of America (FFA)
5632 Mt. Vernon Memorial Highway
PO Box 15160
Alexandria, VA 22309-0160

Future Homemakers of America (FHA)
Home Economics Related Occupations (HERO)
1910 Association Drive
Reston, VA 22091

Health Occupations Students of America (HOSA)
4300 Highline Blvd.
Suite 212D
Oklahoma City, OK 73108

National Postsecondary Agricultural Student Organization (NPASO)
Postsecondary Agricultural Students (PAS)
Box 34
Cobleskill, NY 12043

National Young Farmer Education Association (NYFEA)
PO Box 15160
5632 Mt. Vernon Memorial Highway
Alexandria, VA 22039

Technology Student Association (TSA)
1914 Association Drive
Reston, VA 22091

Vocational Industrial Clubs of America (VICA)
PO Box 3000
Leesburg, VA 22075

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EFFECTIVE PROGRAM PRACTICES

Accelerated Learning

For years conventional wisdom dictated that disadvantaged students be placed in remedial or compensatory programs to improve their mastery of basic skills. Levin (1988) argues that this strategy ensures that disadvantaged students never catch up because remedial programs generally have a slow instructional pace and low student expectations. Also, remedial programs are typically boring, because of their emphasis on skill and drill (discrete skill practice with corrective feedback).

Accelerated learning programs speed up the learning for disadvantaged students so that they can increase their critical thinking, listening, speaking, writing, and reading skills and thereby close the achievement gap. At the secondary level, it is a "school-within-a-school" program. Students identified as being at high risk of dropping out of school are admitted to the program after being interviewed by the teacher and agreeing to enroll in a vocational education program, improve their attendance, and work at their ability level.

Structure of the Program

The Accelerated Learning program is a bridge to the mainstream school program, and students have the option of returning to the more traditional setting when they feel ready. Once in the program, students take up to four classes a day with the Accelerated Learning teacher. A close, interpersonal relationship develops between teacher and student, providing stability and support for the student. The program emphasizes careers and vocational training, and students are helped to make career choices. Students' aptitudes and abilities are assessed, they receive interpretation of the assessment results, and every student develops an individual learning/work plan with the assistance of the teacher.

"The accelerated program isn't working. I'm just flunking out twice as fast."

Participation in extra-curricular activities is encouraged, so that students can develop appropriate social and interpersonal skills. Special attention and counseling is given to help students deal effectively with specific non-academic issues that affect their performance at school, such as family problems, pregnancy, drug or alcohol abuse, eating disorders, or law enforcement issues. Students are closely monitored for attendance, and receive crisis intervention when necessary. Additionally, students meet regularly on an individual basis with the teacher to evaluate their academic, personal, and social progress, and to discuss any problems that may be preventing them from performing to the best of their ability. Other school personnel, such as the nurse and psychologist, may be included in these meetings as appropriate.

Program Resources

The Accelerated Learning teacher serves as a resource person for the staff and administration regarding the needs and expectations of high-risk students. When

requested, the Accelerated Learning teacher provides examples of effective teaching methods and conducts in-service workshops for on-site teachers. Accelerated Learning teachers participate on the School Study Team and the Suicide Prevention Team. Resources available to and utilized by the Accelerated Learning program include peer counselors, the learning resource center, the career guidance center, the career academy, and the teen pregnant minor program.

A Bridge to Success

Of the 500 students that have been in the program at Royal High School in Simi Valley, California, since 1986, ninety-eight percent have graduated with a diploma or high school equivalent. Continuation school enrollments in the district plummeted from over 200 to just 20, and only seven students have dropped out of school. Additionally, Royal High School has an arrangement with Moorpark Community College, which provides a Laser Optics program on the high school campus four days a week with a lab on the college campus on the fifth day. Students receive physical science and math credits through enrollment in the program, and tutoring is provided free of charge by former high-risk students from the program. Upon graduation, students are immediately employable in the laser optics field.

Other student populations that can be served by the Accelerated Learning School include:

- Students with chronic illness who have periods of wellness which allow them to return to school from home study.
- Students returning to school from alternative life styles such as long-term runaway.
- Students experiencing major psychological trauma and undergoing outpatient therapy.
- Students returning to school from an inpatient hospital setting.

Student and Teacher Comments

"I think the Accelerated Learning teachers understand a little bit more; they understand where the kids are coming from; they look at our files and say, "... What a nightmare,"... because we have everything in our program from drug abuse to prison records to teenage pregnancy, everything. Actually, all the problem kids thrown all in one group are coming out better than most of the other kids."

— Travis Miller, Accelerated Learning student

"These kids are oftentimes in crisis, and the crisis could be met on a daily level."

— Pat Diekel, founding Accelerated Learning teacher

"They (the high-risk students) know what they should be doing and quite often, through a series of habits or problems that have arisen, they've kind of dug themselves into a hole. And its not so much that they want to flunk out or fail in school, it is more that they don't

see any way out of it. I see students who desperately need something. I see that they are on that route that if we don't do something to halt this downward march, they are either going to be dropped out or sent on to the continuation school. And so I guess the main thing I do motivationally, is help them plot a course, get back on track, make them see that it is not impossible. It is very realistic, it can be done and they will feel better about it once they start on that course of action. And that's what most of them are looking for, they're looking for just somebody to help them point the way out, so to speak.... Many of these kids come from highly dysfunctional situations. The classes become their family."

— Jim Stevenson, Vice Principal

"I came into it (the Accelerated Learning Program) with a 0.8 grade-point average, and my last report card was a 3.4. So it has really helped. It's a good program."

— Dennis Martin, Accelerated Learning Student

Resources

Royal High School in Simi Valley has operated an Accelerated Learning Program since 1985. Contact Dave Jackson, Principal, at (805) 527-3232.

References

Levin, Henry M. (1988, April). Structuring schools for greater effectiveness with educationally disadvantaged or at-risk students. Paper presented at the Annual Meeting of the American Educational Research Association.

Learning Resource Centers

The learning resource center (LRC) is a valuable resource for all students, but may be especially important for disadvantaged and limited-English proficient students.

The LRC is a facility designed for students who need individualized help. Help may be needed on a one-time basis, sporadically, or at regularly scheduled intervals. An average or above-average student might come to the LRC to use a computer, make up a missed lesson, work on extra-credit activities, or prepare for a special exam such as the SAT. A disadvantaged or LEP student, however, might use the center for ongoing assistance to improve core academic or English language skills, improve study or test-taking skills, or receive tutoring in one or more subjects. Using the center in this way may help disadvantaged and LEP students to achieve success in their career-vocational education and other classes.

Students may be referred to the center by a parent, teacher, or counselor who recognizes that the student needs to make up work for a specific class or to obtain additional assistance in skill development. Students who recognize their own deficiencies may decide independently to utilize the center. The remediation component of the center offers the following services:

- diagnostic testing;
- prescriptive analysis;
- individualized instruction in reading, writing, math, listening, and study skills;
- proficiency test preparation;
- development of English language skills for LEP students; and
- vocabulary development.

The LRC may also be used by teachers who schedule small groups or an entire class of students for a specific lesson taught by center staff. For example, the home economics teacher might suggest that students with poor research and writing skills sign up for a series of lessons on study skills, note taking, and the use of reference materials before starting to work on a term paper.

Another service of the LRC is to provide professional development activities to teachers who want to enhance their skills in working with disadvantaged students. Teachers can increase their ability to diagnose specific learning deficiencies and learn a variety of strategies for remediation. For example, teachers might utilize computer programs to determine the readability of textbooks or other written materials so that they can provide a better match between the materials and students in their classes. Learning center staff may also assist teachers in selecting appropriate reading materials for the skill levels of their learners.

In addition to assisting teachers and providing diagnostic and remediation services to students within the center, the LRC staff provide in-class presentations as requested. Frequently requested topics include: How to Study; How to Prepare For and Take a Test; How to Write a Paper; and How to Use the LRC.

Resources

Woodland High School. (1989). The learning resource center. Woodland High School, 21 N. West St., Woodland, CA 95695. Contact Kevin Brown, Principal, at (916) 662-4678.

Parents as Partners

In 1989 the California State Board of Education (CDE, 1989, p. 36), recognizing that a child's education is a responsibility shared by school and family, adopted a policy on parent involvement. The policy outlines six types of parent involvement:

- Help parents develop the knowledge and skills to support and assist their children's efforts in learning at home;
- Provide parents with the knowledge of techniques designed to assist children in learning activities at home;
- Coordinate community and support services for children and families;
- Promote communication between schools and families;
- Involve parents in instructional and support roles at school; and
- Support parents as decision-makers and develop their leadership in governance, advisory, and advocacy roles.

"Involved, supportive parents are great to have . . . but mine sometimes carry it a little too far."

Parent involvement is a strength in education (CDE, 1989). For example, in the Home-School Partnership Training for Migrant Parents, parents are helped to appreciate the crucial role they play in their children's lives and provided with ideas, skills, and techniques on how to work more effectively with their children at home.

Vasa and Steckelberg (1987) wrote that in the past parents were not regarded as an integral part of the educational system, but now they are viewed as essential to the educational process. The change of attitude came as a result of: (1) the passage of legislation that delegates responsibilities to parents in their child's education; (2) the increasing realization that parents play a key role in the education of their children; and (3) the realization that parents can play an important role in the vocational choices of their children (p. 345). These assumptions are based upon a rationale that the home-school communications are important because:

1. Parents care more about their children than the school does;
2. Parents have the right to know about and be involved in their child's educational programs; and
3. Parents can be effective teachers.

(p. 346)

Parents are often the single most important role model for students' attitudes and values about work. If parents are not exemplary role models in this regard, the responsibility may fall to others, including career-vocational educators, to present the importance of a strong work ethic which employers expect.

Strategies that Work Best with Parents

Vocational educators have been communicating with employers both through formal and informal methods for the past decades. Now their expertise in the communication process with employers can be generalized to communication skills with parents as well.

Vasa and Steckelberg (1987, p. 348) suggest:

- individual parent conferences;
- telephone conferences;
- correspondence by mail;
- small group parent meetings;
- large group parent orientation meetings; and
- home visits.

The following are important points for educators to remember about parents when planning and working with them (Stevens, 1984):

- **Deal with both parents when possible.** Parents may not agree on future goals and it is important for the teacher to understand where each parent stands in the youngster's decision-making process. It is equally important for both parents to have an opportunity to verbally discuss their ideas and concerns with the teacher. Often parents feel intimidated by teachers and the school system. Support garnered from each other may provide for a better balance for a successful meeting.

- **Set a time limit.** Before a conference, and again during the first few minutes, establish a time limit for the meeting. This limit helps create a business-like tone.

- **Establish an atmosphere of mutual respect and trust.** Use words and actions that make everyone feel respected and welcome at the conference. It is important that both the teacher and the parents demonstrate confidence and verbally express that confidence in their ability to communicate and work together as equals.

- **Explore possible solutions to any issues that may be of concern.** These do not have to be problems to be dealt with, but may relate to upcoming needs of the student and how the school and parents can plan ahead for success in the intervention process on behalf of the student.

- **Give the parents a turn.** Parents need an opportunity for their own agenda. It is important that the meeting include some time for parents to discuss an issue they feel needs clarification. Closing a meeting with the parents leading the discussion and getting some issues resolved is an excellent method of establishing positive relationships for the future.

Why is Parent Involvement Necessary?

Dropout prevention strategies usually identify the involvement of parents as of primary importance (e.g., home visits, parents as tutors) or as a supportive service (parental permission, conferences). Parent involvement is important because:

- Parents of disadvantaged youth can be at a loss as to how best to deal with and help their youngsters;
- Not all school problems are precipitated by the school environment;
- Parent involvement approaches recognize the importance of the family in the student's education; and
- Working with parents can positively affect student performance, behaviors, and attitudes.

There are many positive benefits to parental involvement, especially when working with the disadvantaged population. Working with parents, in effect, is often working with the source of the problem, instead of treating a symptom.

Some Possible Benefits of Parental Involvement

The Vocational Studies Center developed a guide entitled *Staying In: A Dropout Prevention Handbook K-12* in which they identified the following benefits of working with parents:

1. Teachers can more accurately assess students when they have more information about their home environment.
2. Involved parents can learn to appreciate their youngster's strengths and weaknesses.
3. Parents, as taxpayers, are our employers and have a right to a voice in their youngster's education.
4. Parent involvement can maximize consumer satisfaction in our educational system.
5. Parents are daily teaching their children and it benefits everyone when we support them in their endeavor.
6. Parent involvement can serve as a way to increase use of teacher time.
7. Involved parents can provide a support system for one another.
8. Involving parents will make them feel like partners in education — working toward a common goal.
9. Helping students solve or cope with family problems can significantly reduce tensions and problems in school.
10. Helping parents improve parenting skills can benefit school and society through more responsible and school-ready students.
11. Parents have valuable life experiences that can be valuable resources for the total school community.
12. A student's acceptance of school rests heavily on parental attitudes and interactions with school personnel.

(p. 7)

Working with parents can have countless benefits, but an important rule to keep in mind is that educators who expect or plan to be effective in working with parents, have to be sensitized to issues which are not always apparent. Vasa and Steckelberg (1987, p. 350) generated a checklist of parent conference guidelines for educators. They proposed that educators:

- plan for all student conferences in advance;
- have a clear purpose in mind for each conference (e.g., to report student progress);
- inform parents of the purpose of the conference;
- have all student records available for review prior to the conference;
- allow enough time to discuss the issues thoroughly; the parent should not feel rushed during the conference;
- conduct the conference privately in a place free from distractions and interruptions;
- invite the student to attend, unless the conference covers emotionally-laden subjects that might adversely affect the student;
- hold the conference at a time convenient to the parent;
- be aware of parent transportation needs and child care needs;
- deal honestly with parents;

- listen to the parents and respect their confidence;
- attempt to answer all questions raised by the parent;
- avoid giving direct advice to the parents on parenting.
- back the school administration and other teachers during the conference;
- keep a record of the conference; and
- keep the parent informed of changes following the conference.

Parents can be partners/resources in the educational process, working together with teachers, administrators, and other school personnel to assist their children in reaching their full potential. Teachers can offer parents tools for education and motivation which will help them help the students of today and tomorrow.

Dan is a successful auto mechanic. He recently completed a two-year auto mechanics course through a Regional Occupational Center. In his elementary years, Dan, as is typical of many young boys, expressed an interest in sports. Dan's mother, a single parent, had little time to work with him to pursue his talents, but she encouraged his participation as a means to broaden his interests and provide more opportunities for him to succeed. Beginning early in his elementary years, Dan was assigned chores at home and his mother praised him for his efforts and cooperation.

When Dan entered junior high school, he developed a strong interest in motorcycles. Dan's mother had always enjoyed them and they began going to races together to watch the races and talk to the mechanics. By the time Dan reached high school, he knew what his interests were and how much effort it would take to complete a course of study in auto mechanics. Dan's mother asked school personnel to take him to visit the ROP. She agreed to a vocational evaluation to determine what program was best for Dan. The teachers and counselors, along with Dan and his mother, worked out a schedule so Dan could receive two years of vocational education while still in the high school setting. At the end of the two years, Dan's mother stood proudly as Dan received his diploma and a certificate in Auto Mechanics.

Dan was lucky. His parent, even with limited time, provided support through his education and worked as a partner in the process of providing vocational education to her son.

Resources

Armstrong, T. (1987). In their own way: Discovering and encouraging your child's personal learning style. Los Angeles: Jeremy P. Tarcher.

Berle, N., Henderson, A., & Kerewsky, W. (1989). The middle school years: A parent's handbook. Columbia, MD: National Committee for Citizens in Education.

Henderson, A. (1987). The evidence continues to grow: Parent involvement improves student achievement, an annotated bibliography. Columbia, MD: National Committee for Citizens in Education.

Henderson, A. (1985). Beyond the bake sale: An educator's guide to working with parents. Columbia, MD: Vocational Committee for Citizens in Education.

"How to Promote Parent Involvement in Your School" and "How to get Involved in Your Child's Education." These brochures provide checklists of things parents can do to improve communication and cooperation, fulfill basic duties as an educator, support children's academic growth, and develop positive attitudes about school. Developed by the Missouri Department of Elementary and Secondary Education, Missouri PTA, and Southwestern Bell Telephone.

Rious, W. (1980). You can improve your child's school: Practical answers to questions parents ask most about their public schools. Needham Heights, MA: Simon and Schuster.

Tindall, L., & Gugerty, J. (1985). Parent power: Improving interagency linkages for handicapped youth. Journal for Vocational Special Needs Education, 7 (2), 9-14.

"What Makes Sally Learn." A 26-minute videotape focusing on the value of parent involvement in education that spotlights positive ways parents and schools can work together. The tape can be borrowed from the Missouri Department of Elementary and Secondary Education.

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Sarkees, M. (1986). Communicating vocational education options to disadvantaged students and their parents. Paper presented at the American Vocational Education Convention, Dallas, TX.

Stevens, S. (1984). Classroom success for the learning disabled. Winston-Salem, NC: John F. Blair.

Vasa, S. F., & Steckelberg, A. L. (1987). The role of parents in the education of vocational special needs youth. In G. Meers (Ed.), Handbook of Vocational Special Needs Education. Rockville, MD: Aspen.

Partnership Academies

The academy schools concept began in Philadelphia in 1969 when local corporations, recognizing that the pool of potential applicants for entry-level positions was increasingly made up of at-risk youth, got together with educators and community leaders to plan an innovative high school program to keep students in school and prepare them for employment.

The purpose of the program was to link academic skills and vocational preparation with job opportunity. The Academy focused on a specific vocational area — the first Academy High School presenting their academic program through the electronics field. The Academy operated as a "school within a school" housed within a comprehensive four-year high school. A direct link with the Philadelphia Electrical Company was an essential component of the program. The curriculum was designed to prepare students to meet both academic graduation and vocational training requirements, so students would be eligible for employment upon graduation. Academies in business, automotive and mechanical sciences, and health followed.

Results of the Philadelphia Academies included an increase in daily attendance of academy students to over 90 percent, a reduction in the dropout rate to 20 percent, and a rise in the number of students entering postsecondary training. Based on these results, two academies were opened in California in 1981.

California Partnership Academies

The first two Academies originated in the Sequoia Union High School District. Modeled on the Philadelphia plan, they worked in partnership with high technology Silicon Valley computer and electronics companies. The California Department of Education declared the Academies a model program and Assembly Bill 3104 was passed to fund replications in ten high schools in the state. Each new academy received a $50,000 grant from the state, matched directly or in-kind by the district and community/private sector funding. Subsequently, in 1987, Senate Bill 605 provided for up to 15 additional replications per year for four years. Funding for SB 605 began in 1988-89.

The Academy program under SB 605 is still based on a three-way partnership between the state, the school district, and local business and industry. The funding process, however, has changed. Each academy, selected through a grant competition, receives state funding of $750 per year for each qualified student, up to a total of $67,500 for a fiscal year. Funds must be matched either directly or in-kind by both the district and participating companies or other private sector organizations. This funding is based on the number of students enrolled in the program who remain in school and make normal progress towards graduation. This is determined at the end of the school year. Thus, programs are reimbursed for excess cost expenditures only for their successful students.

Components of the Program

Student Eligibility

Students are eligible for the Partnership Academy program if they exhibit at least three of the following criteria:

- Past record of irregular attendance;

- Past record of underachievement (at least one year behind in the course-work for the student's grade level);
- Past record of low motivation or a disinterest in the regular school program; and/or
- Disadvantaged economically.

Students must apply for admission to the program and, if selected, begin in the tenth grade.

Corporate Participation

In order to establish a link in students' minds between attending school and getting a job, a close relationship with local business and industry is required. Firsthand exposure to career information is provided through field trips, guest speakers, and instructors loaned from industry. A mentor program pairs eleventh grade students with industry volunteers, and summer jobs are arranged for students after the eleventh grade. In addition, corporate representatives serve on various steering and advisory committees, assist in the development and revision of curriculum, and make presentations about the program to interested organizations and potential sponsors. Lastly, business and industry contribute equipment, field trip sites, and the use of their facilities for meetings and award ceremonies.

The Curriculum

Students prepare for a regular high school diploma and receive instruction in at least three academic areas each term. These subjects are taught as part of the "school within a school" structure, so that they relate to the specific career orientation of the academy. Students also take a "lab" class related to the academy's occupational field, in which they learn about the occupation by participating in hands-on experiences. Career information is infused throughout the curriculum, and emphasizes general employability skills.

"If you want to see real results, get me a couple of corporate sponsors."

Effectiveness

An evaluation report published by Policy Analysis for California Education (PACE) in 1988 concluded that "the Academy program model is capable of producing substantial positive effects on students who participate in it." These include increased attendance, improved academic performance, and higher grade-point average and graduation rate. The report noted, however, that the model is complex to implement, and has been implemented unevenly across sites. It was recommended that the requirements of SB 605 be carefully followed with respect to implementing all aspects of the program; i.e., appropriate student selection, school-within-a-school structure, and necessary school and district support. It was further recommended that new sites receive sufficient training so that everyone involved fully understands the model; that the performance of new academies be carefully tracked; that the California Department of Education monitor program implementation to be sure that there is consistency with the model; and that evaluation be continued at least through June, 1990 to allow for assessment of effects of the first two classes of graduates under SB 605.

Expansion

Grants for planning and curriculum development will be made available to selected sites. For information and application timelines, contact the Division of Youth, Adult, and Alternative Education (below).

Resources

Dayton, Charles, Weisberg, Alan, Stern, David, & Evans, John. (1988). Peninsula academies replications: 1986-67 evaluation report. Berkeley, CA: Policy Analysis for California Education.

McMullan, Bernard, & Snyder, Phyllis. (1987). Allies in education: Schools and business working together for at-risk youth. Philadelphia, PA: Public/Private Ventures.

Community/Education Resources

Youth, Adult, and Alternative Education Division, California Department of Education, 560 J Street, Sacramento, CA 95814. Administers Partnership Academy programs. Contact Constance Barber, Administrator, (916) 324-7116.

References

Dayton, C. W., & Reller, D. J. (1987, April). A training partnership for high-risk youth. Vocational Education Journal, 62, (3), 34-36.

Peer Tutoring

Peer tutoring is a system of instruction in which students help one another and learn by teaching. Although for years teachers have had more able learners help less able learners of the same age or younger, the term peer tutoring suggests a well-developed and articulated system in which the following conditions exist: (1) tutor and learner are carefully matched; (2) there is frequent and regular contact between them; (3) both parties understand clearly what is to be done and the materials to be used; (4) tutors are trained in good tutoring techniques; (5) a system exists for monitoring and supervising the tutoring; and (6) the effectiveness of the tutoring is carefully evaluated.

How Can Peer Tutoring be Used in Vocational Education Classes?

The most obvious way in which peer tutoring can be used for disadvantaged or limited-English proficient students is to have them tutored by a competent classmate or older student. For disadvantaged students who may be excessively absent from school, or who are deficient in basic skills and therefore unable to profit from instruction in the career-vocational education classroom, or limited-English proficient students who may allow their attention to wander and misunderstand directions, peer tutoring provides one-to-one attention and a program of work specifically tailored to individual needs. Tasks are selected to ideally suit the student and he/she is closely monitored. Numerous opportunities are provided for the student to demonstrate the required behaviors and receive feedback on the correctness of the efforts being made. In a peer tutoring situation the learner is spending a maximum amount of time on task, a variable that research has shown to be highly correlated with student success and more effective than an equal amount of normal classroom instruction (Cohen et al., 1982). In addition, the special needs student has the opportunity to interact and form a close personal relationship with a high status peer.

Los Medanos Community College began a peer tutoring program in the 1970s, which has continued and been expanded, in response to a growing number of students in vocational education programs who were dislocated workers with inadequate basic skills. Deficiencies in reading and writing were impeding students' progress through the vocational program and causing high attrition rates. Additionally, local employers were concerned about the poor basic skills performance of program graduates.

Working collaboratively with language arts faculty, vocational education instructors developed occupationally relevant tests in reading and writing. These authentic assessment instruments are used to identify students enrolled in the program who are weak in basic skills.

Identified students are informed about the tutorial program, and urged to work with a tutor assigned to their course. Tutors are recommended by the vocational faculty, and must have completed the course for which they are tutoring, with a grade of B or better. They are trained by the language arts faculty and paid hourly wages. Tutoring takes place primarily during lab periods, on an individual and small group basis. In addition to helping students with reading and writing related to the vocational course requirements, tutors assist disadvantaged students to develop study skills techniques.

Another way in which special needs students can participate in peer tutoring is to act as a cross-age tutor for a younger child who needs assistance with basic or English language skills. Research has consistently shown that peer tutoring improves attainment in the tutored subject for both tutor and learner. In fact, what were described as "startling increases" were noted when adolescents who were underachieving in reading were placed as cross-age reading tutors for elementary school children. Numerous studies have shown that adolescents can significantly improve their reading by tutoring (Goodlad and Hirst, 1989). Cross-age tutoring can be used in addition to remediation programs.

Beyond the academic gains, peer tutoring has been used as an intervention strategy for students with emotional and behavioral problems. Peer tutoring enhances the self-esteem and increases the confidence of special needs students. Too often, handicapped and disadvantaged students face social rejection despite being placed in mainstreamed classrooms. Disadvantaged students who are deficient in academic areas often display a negative attitude toward school and show little interest in academic work. Being a tutor places the student in the role of a competent and respected teacher. It provides an opportunity to increase the contact between students from different cultures. The tutor develops a sense of pride and accomplishment, learns trust and responsibility, and develops some insight into the teaching/learning process, while reinforcing core academic skills.

The California Medi-Corps Program was initiated by the California Department of Education. Although it originally used college students as tutors, it was expanded to include high school students interested in a career in the health field. Identified tutors, who need a 2.5 grade-point average to qualify, as well as a knowledge of Spanish and English, attend a pre-service training program at a state university, and then tutor migrant children in grades 1-12 during a six-week summer session, teaching specific units in health, nutrition, and safety. Although the C+ GPA will eliminate many academically disadvantaged students from participating in the program, other disadvantaged students will qualify. Tutors work one-on-one and in small groups with children and are supervised by an adult coordinator on a biweekly basis. In addition to teaching students subject area content, students serve as bilingual role models for the younger children, and increase their own sense of self-esteem.

How Should Tutors and Learners Be Selected?

There are conflicting results of research concerning the effect of sex pairings on peer tutoring. Some studies (Cloward, 1967; Meverach, 1985) found no significant effects of different sex pairings. Other studies (Topping and Whiteley, 1988) found that: male-male tutorial combinations were effective for both tutor and learner; female-female combinations were good for the learners, but poor for tutors; and mixed-sex pairings were good for the tutors, but poor for the learners. It is commonly accepted that same sex pairings are more effective than mixed-sex, and although this may be an oversimplification of a complex relationship, children seem to prefer being paired with children of the same sex.

It may be useful to consider age and ability matching between tutors and learners for tutoring complex subjects, but this is less important when the subject being tutored is basic skills. Low-achieving tutors can make a significant difference in the reading and mathematics achievement of their learners. Be aware of cultural differences when pairing students. For example, in some cultures, having a female tutor a male of the same age poses problems.

How Often and How Long Should Tutoring Sessions Continue?

It has been suggested that an effective tutoring program will show positive results in as little as ten hours of contact. There is some evidence (and common sense suggests) that the longer the tutoring can go in terms of number of weeks, the more visible the result.

Common practice is that tutoring sessions last approximately 30 minutes, although there is little evidence about what should be the optimal length.

How Should Tutors Be Trained?

Although there appears to be no need for a complex peer tutor training program, basic instructional principles should be taught before tutoring commences. These include:

- How to establish a supportive environment;
- How to plan a tutoring session by becoming familiar with the curriculum, the teacher's objectives, and the student's ability level;
- How to provide positive reinforcement when the learner gives a correct answer;
- What to do when the learner gives an incorrect answer (i.e., avoid sarcasm or sneering, reword the question, model the answer);
- How to vary the content and pace of a tutoring session;
- The importance of summarizing and reinforcing learning at the end of the session, and leaving on a positive note so that the learner will look forward to returning; and
- Record-keeping for monitoring progress.

How Should Peer Tutoring Be Evaluated?

The simplest form of evaluation is for teachers to observe both tutors and learners for behavior changes on the following dimensions: attendance, class participation, study habits, homework, and ability to perform in the subject being tutored. These observations can be made more objective by the use of rating scales with numerical values assigned on each variable both before and after tutoring. Scores on criterion-referenced tests may also serve as an evaluation criterion. Students should be encouraged to keep folders of their work so that pre- and post results can be analyzed.

Resources

Ashley, William, et al. (1986). Peer tutoring: A guide to program design. Columbus, OH: National Center for Research in Vocational Education. **VOICE #08992.**

Asselin, Susan B. (1983, June). Peer tutoring inservice program: Effects on home economics teachers' knowledge and attitudes. Home Economics Research Journal, 11 (4), 352-58.

Asselin, Susan B. (1983, Fall). The use of peer tutors in vocational education to assist mildly handicapped students. Career Development for Exceptional Individuals, 6 (2), 75-84.

Goodlad, Sinclair. (1979). Learning by teaching. London: Community Service Volunteers.

Goodlad, S., & Hirst, B. (1989). Peer tutoring. London: Kogan Page.

Koskinen, P., & Wilson, R. (1982). Tutoring: A guide for success. New York: Teachers College Press.

Topping, Keith. (1988). The peer tutoring handbook. Cambridge, MA: Brookline Books.

References

Cohen, P., Kulik, J., & Kulik, C. (1982). Educational outcomes of tutoring, a meta-analysis of findings. American Educational Research Journal, 19, (2), 237-48.

Cloward, R. A. (1967). Studies in tutoring. Journal of Experimental Education, 36, (1), 14-25.

Goodlad, S., & Hirst, B. (1989). Peer tutoring. London: Kogan Page.

Meverach, R. (1985). The effects of cooperative mastery learning strategies on mathematical achievement. Journal of Educational Research, 78, (6), July-August, 372-377.

Topping, K., & Whiteley, M. (1988). Sex differences in the effectiveness of peer tutoring. The Paired Reading Bulletin, 4, 16-23.

ADDITIONAL RESOURCES

Additional Resources

VOICE

VOICE (Vocational and Occupational Information Center for Educators) provides information and resources to vocational educators throughout California. Materials may be borrowed for a two-week loan period by contacting VOICE at (707) 664-2416, or by writing to CIHS, Sonoma State University, Rohnert Park, CA 94928. A small fee is charged to cover the cost of handling and mailing.

The following are a few materials in the area of integrating academic and vocational education:

Balancing the Curriculum with Vocational Education: A Strategies Handbook VOICE #09171
Handbook serves as a resource for program planners and curriculum developers who wish to revise, review, and promote vocational education programs. Contents include vocational education policy development, vocational classes that fulfill academic graduation requirements, sample course outlines, and effective use of vocational advisory committees.

Basic Skills-Integration of Mathematics and Science into the Teaching of Vocational Education VOICE #08401
Paper discusses the rationale, significance, and processes related to the integration of mathematics and science into the service areas of vocational education. Discusses the process, systems, and construction approaches to integration.

Basics: Bridging Vocational and Academic Skills VOICE #09094-AV
This is a series of resources which help educators combine vocational and academic approaches to improve student basic skills. Includes: Targeted Teaching Techniques, Instructional Program Development, and a Bridger's Guide which gives information on implementation and exemplary practices.

A Guide to Understanding the Educational Excellence Program
This document contains specific background information, project outcomes, and observations about changing a school's philosophy and environment. Also included are the 42 objectives of the project and a list of resources which describe how the project schools incorporated the objectives at their sites.

Integrating Vocational-Technical Education and Basic Academic Skills, A Status Report VOICE #10562
Report discusses trends toward integration of vocational-technical education and academics. Provides information on national, state, and local efforts toward integration. Also includes instruments used for evaluation of each state's program.

Integration of Academic and Vocational-Technical Education: An Administrator's Guide VOICE #04025
Guide discusses the integration of academic and vocational-technical education to provide a balance between liberal education, academic preparation, and technical/ employment skills education. Provides integration strategies, factors for successful integration, points of concern, and descriptions of model programs.

NCRVE: Integrating Academic and Vocational Studies VOICE #02625-AV
Experts and panel discuss the process and need for integration of academic and

vocational studies in schools. Discusses legislation problems, effects of educational reform, economic impact, etc.

Promoting Student Achievement: Teaching Behaviors That Work
VOICE #07819
A guide for consumer and homemaking education and home economics related occupation teachers working with academically disadvantaged students.

Secondary Vocational Education: Imperative for Excellence VOICE #08164
Report examines federal policy and legislation that will encourage excellence in secondary vocational education; especially in productivity enhancement, integrating vocational and academic programs, and allocating funds to special needs populations, including the handicapped, the disadvantaged, minorities, and students with limited English-speaking ability.

TASPP

TASPP is the Technical Assistance for Special Populations Program, part of the National Center for Research in Vocational Education (NCRVE). TASPP is located at the University of Illinois and produces materials, responds to inquiries about vocational programs for special groups, and provides an array of services for professionals serving special populations in vocational education programs. Materials and information can be obtained by writing the TASPP Office, University of Illinois, Room 345 Education Building, 1310 S. Sixth Street, Champaign, IL 61820, or by calling (217) 333-0807.

TASPP BRIEFS
A series of six four-page BRIEFS are available:

- National Recognition Program for Exemplary Vocational Education Programs Serving Special Needs Populations
- Vocational Education and the At Risk Student
- What Works in Vocational Education for Students Who are At Risk
- The Growing Need for Quality Vocational Education Programs for Individuals with Limited English Proficiency
- Selected Resources on Developing Vocational Programs for Individuals with Limited English Proficiency
- Improving the Self Sufficiency of Teen Parents.

Future BRIEFS will address the unique needs of special populations in urban and rural settings, integrating basics and vocational education, implementation of the Carl D. Perkins Vocational Education Act Reauthorization, and exemplary vocational special needs programs. BRIEFS are disseminated free of charge.

TASPP BULLETIN
A biannual newsletter focusing on serving special needs learners in vocational education. Featured articles address current issues, topics, research, resources, legislation, conferences, and other information of interest to professionals involved in serving students with special needs in programs and agencies at the local, state, national, and international levels. The TASPP BULLETIN is disseminated free of charge.

TASPP RESOURCE GUIDES
A series of resource guides on transition, teen parents, students with limited-English proficiency, and students at risk are available free of charge. Each guide contains

selected materials on relevant publications, newsletters, agencies, associations, organizations, centers for educational information/services, clearinghouses, computer-based information networks, and databases. For each entry, an annotation is provided along with the price and ordering information.

EFFECTIVE TEACHING

Davis, Barbara G. (In press). Tools for teaching. San Francisco: Jossey-Bass, Inc.

Hofmeister, Alan M. (1990). Research into practice: Implementing effective teaching strategies. Needham Heights, MA: Allyn and Bacon.

Macmillan Publishing Company. (1986). Handbook of research on teaching (3d ed.). New York: Author.

MISCELLANEOUS

America's Choice: High Skills or Low Wages! (1990).
Recently released by the Commission on the Skills of the American Workforce, this report is based on eight months of intensive research and in-depth study of the labor market systems in the U.S., Japan, Germany, Sweden, Denmark, Ireland, and Singapore. The report follows up on a number of recent reports and conferences calling for reform of the schools and the school-to-work transition, by proposing a comprehensive reform of the education and training field and the development of a national workforce policy. The recommendations complement and expand on existing trends, such as competency-based education, the Tech-Prep curriculum agreements, the NOIC/SOIC system, and the Labor Secretary's Commission on Necessary Skills. The Commission is currently working on a national standard of skills that the schools must meet to equip students to meet industry needs. Created by the National Center on Education and the Economy, the Commission recommends five specific reforms to educate and train people for high-skilled, productive work.
($18.00 ppd.). Contact: National Center on Education and the Economy, P.O. Box 10670, Rochester, NY 14610; (716) 546-7620.

The Bottom Line: Basic Skills in the Workplace. (1988).
The suggestions in this booklet, produced by the United States Departments of Education and Labor, provide guidelines for setting up workplace programs to improve the basic skills of workers. First, the publication discusses the need for improved basic skills in the changing workforce. The symptoms and sources of literacy problems and tips for performing a "literacy audit" are highlighted. In addition, several topics are addressed in relation to solving workforce literacy problems. These include: designing the training program, setting goals, assessing available resources, recruiting trainees, working with partners, building the curriculum, and evaluating the program. Resources, references, suggested readings, and additional sources of information are included.
(50 pages, no charge). Contact: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325.

The Learning Enterprise. (1989, February).
Written by A. P. Carnevale and L. J. Gainer, this publication, summarizing a portion of the research conducted under a two-year joint project of the American Society for Training and Development and the U.S. Department of Labor, challenges the biases spawned by recent economic history. It points out that by the year 2000, there are likely to be too few well-educated and well-trained workers to satisfy the nation's economic

needs. It begins by explaining the relationship between job-related learning, individual opportunity, and the competitiveness of employer institutions. Next, it examines the dynamics that link changing skill requirements on the job to training and education. This is followed by a snapshot of the existing and emerging institutions that provide job-related training, or access to it. The next section is a closer look at the employer-based training and development system, in general, and the differences between small and large employers, in particular. The following and most sizeable section considers job-related education and training in individual occupations. The discussion concludes with recommendations for improving the nation's job-related education and training system. (54 pages, no charge). Contact: American Society for Training and Development, 1630 Duke Street, Box 1443, Alexandria, VA 22313; (703) 683-8100.

New Developments in Improving the Integration of Academic and Vocational Education. (1989, August).
Written by T. Owens and L. McClure, this paper focuses on the need for integration of academic and vocational education. A conceptual framework to assist in identifying the factors that influence cooperation between academic and vocational teachers and the student and teacher benefits resulting from it are discussed. Effective practices in applied curricula for secondary vocational education students are overviewed. Preliminary outcomes from The National Center for Research in Vocational Education's evaluation of efforts to integrate academic and vocational education are highlighted. Finally, recommendations to further the integration of academics and vocational education at the district, state, regional, and national levels and in teacher education are stated. References are included.
(25 pages, $5.25). Contact: Northwest Regional Educational Laboratory Marketing Office, 101 S.W. Main Street, Suite 500, Portland, OR 97204; (503) 275-9500.

School-to-Work Transition for At-Risk Youth. (1989).
Recently released by the ERIC Clearinghouse on Adult, Career, and Vocational Education, this publication discusses how school-to-work transition helps at-risk youth develop the skills and attitudes needed to secure and maintain employment and an adult lifestyle. The transition process must include a wide range of articulated services, and systematic procedures for prescribing appropriate assistance and for tracking information. The author, S. H. Feichtner, identifies a number of program and service barriers that compound the societal barriers faced by at-risk youth and addresses major policy concerns and research needs.
(80 pages, $8.75). Contact: Center on Education and Training for Employment, Center Publications, 1900 Kenny Road, Columbus, OH 43210-1090; (800) 848-4815.

Successful Practices Handbook. (1990).
Edited by K. Wardell, this publication is a compilation of successful strategies used by health careers teachers in addressing issues such as poor attendance, lack of motivation, limited-English proficiency, potential dropouts, disadvantaged learners, rewards, retention, and recruitment. The teachers who provided the information are from California as well as from other states throughout the nation. Contact: California State Polytechnic University, Pomona, CA; or California Department of Education, Sacramento, CA.

Vocational Education in the 1990s: Major Issues. (1990).
Edited by Albert J. Pautler, Jr., this book contains 14 chapters by leaders in the field, providing an overview of and detail on virtually all aspects of vocational education in the coming decade. It touches on key issues and concerns in both policy and implementation of school programs at all levels. Chapters include: Historical Background of Vocational Education, Policy Issues Perspectives, The Secondary Vocational Program, Postsecondary Occupational Education, Vocational Teacher Preparation, Organizational Structure of Vocational Education, Administrative Leadership Issues in

Vocational Education, The Curriculum, Special Programs for Special Needs Students, The Relationship of History to the Future of Vocational Education, Issues in Vocational Education, The Image of the Profession of Vocational Education, A Vision of the Next Ten Years, and The Role of Vocational Education in P*reparing Students for the Future*. Three primary objectives guided the authors who contributed to this book: (1) to discuss the major issues which face vocational education at the present time; (2) an attempt to make suggestions on how best to deal with those issues; and (3) to raise topics for ongoing research that will best address and resolve the issues at hand.
(302 pages; list price $16.95, school price $13.56). Contact: Prakken Publications, 416 Longshore Drive, P.O. Box 8623, Ann Arbor, MI 48107; (313) 769-1211.

Workplace Basics: The Skills Employers Want. (1989, February).
This publication, written by A. P. Carnevale, L. J. Gainer, and A. S. Meltzer, summarizes a portion of the research conducted under a two-year joint project of the American Society for Training and Development and the U.S. Department of Labor. It represents a brief overview of the findings from their basic workplace skills research. The three sections of this publication address the following: the growing need for basic skills training, the skills employers want, and the steps involved in developing programs to deliver workplace basics. The authors recommend a systematic approach to training, design, development, and delivery. In addition, they assert that such programs are most successful when they incorporate an applied learning method that uses a functional context approach to job specific training. References and suggestions for additional reading are included.
(33 pages, no charge). Contact: American Society for Training and Development, 1630 Duke Street, Box 1443, Alexandria, VA 22313; (703) 683-8100.

APPENDICES

VOCATIONAL AND OCCUPATIONAL INFORMATION CENTER FOR EDUCATORS

CIHS
Sonoma State University
Rohnert Park, CA 94928
(707) 664-2416

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SAMPLE ABSTRACT

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04210                                   BE

                  ---CLASSIFICATION CATEGORY---

 10       BE,GLEASON,1981,LAPS,MANUALS,SENIOR-HIGH,STUDENTS,TEACHERS,
 20       CAREER-EDUCATION,CAREER-EXPLORATION,DISTRIBUTIVE-EDUCATION,
 30       INDIVIDUALIZED-INSTRUCTION,MARKETING

                  ---DESCRIPTION CATEGORY---

 10  >ITEM NO:  04210                              DATE ENTERED:  6-23-81
 20  ********************************************************************
 30  >MARKETING:  HANDBOOK FOR THE 80'S
 40  ********************************************************************
 50    Manual exposes high school students to the idea of choosing
 60  a career of marketing/distribution.  Suggests methods for
 70  students to discover interests and competencies.  Describes the
 80  Classroom Management System (CMS) which is a computerized index
 90  of LAPs.  Each student may develop and complete his/her own
100  individualized vocational education program.  Includes sample
110  calendar, To-Do list, competency list, and progress chart which
120  provide structure for each student's program.
130  >AUTHOR:  James R. Gleason
140  DATE:     1981
150  PAGES:    45
160  SOURCE:   IDECC, Columbus, OH
170  --------------------------------------------------------------------
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ITEM NUMBER → 10

TITLE → 30

AUTHOR → 130

Teaching Disadvantaged Students:
Successful Strategies in Career-Vocational Education
Field Test Evaluation Form

1. To what extent is the information in this publication relevant to the work of teachers in career-vocational education?

Uniformly Relevant	Relevant in Most Sections	Relevant in Some Sections	Relevant in a Few Sections	Not Relevant
5	4	3	2	1

Comments: _____

_____

_____

2. Please rate and comment on the overall quality of the content of the Teaching Guide.

Excellent Quality	Very Good Quality	Good Quality	Fair Quality	Poor Quality
5	4	3	2	1

Comments: _____

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3. Please rate and comment on the readability of this Teaching Guide.

Extremely Readable	Very Readable	Readable	Somewhat Readable	Not Readable
5	4	3	2	1

Comments: _____

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4. Please rate and comment on the usefulness of each section to educators in career-vocational education programs.

	Extremely Useful	Very Useful	Useful	Somewhat Useful	Not Useful
Transition Experiences: School to Work	5	4	3	2	1
Integration of Academic Core Curriculum and Vocational Content	5	4	3	2	1
Effective Teaching Strategies	5	4	3	2	1
Effective Program Practices	5	4	3	2	1

Comments:

5. Please indicate below, additions or corrections that should be made in this document, based on your experience working with disadvantaged and/or LEP students in mainstream career-vocational education. Be sure to include the page number where the change should occur.

Thank you for taking time to complete this evaluation. Please remove form, fold along dotted lines, and mail.

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